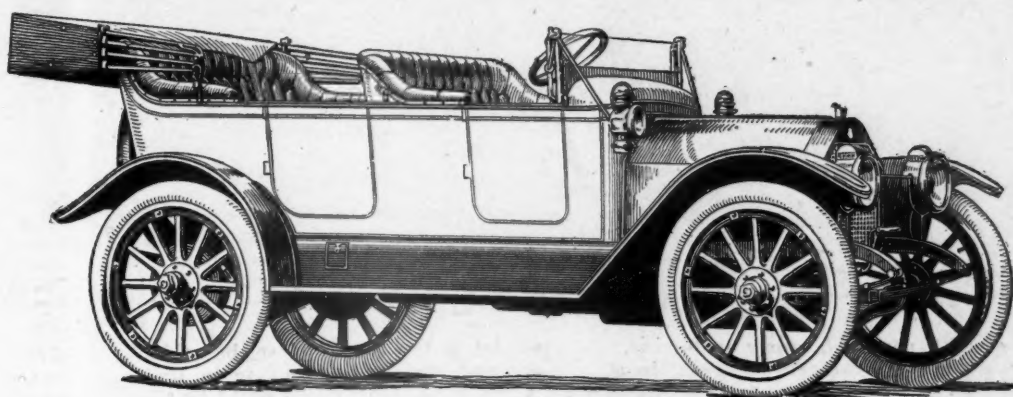


MOTOR AGE

VOLUME XXII

CHICAGO, SEPTEMBER 12, 1912

NUMBER 11



1913's Remarkable Car Value— the Big, Handsome Maxwell "40"

Fully Equipped, \$1675

We have built a finer Maxwell than ever before. It embodies the very latest refinements; is large and powerful; and retains all the thoroughly proved Maxwell mechanical features. The detailed value crowded into this new model, summed up, make it easily the leader among all cars under \$2500.

NOTABLE FEATURES

Left hand drive
Center control
Long stroke silent motor
Selective transmission
116-inch wheelbase
36-inch wheels

Demountable rims
French design body
Black and nickel trim
Metal bodies—24 coats of
paint and varnish
Roomy tonneau

Turkish cushions
Two front doors
Effective dash ventilators
Self-starter
Stylish Mohair top and
side curtains

High grade lamp equip-
ment
Electric lights
Concealed horn
Tire carrier and protector
Extra tire rims

The "40" is made in two body styles. The Touring Car, \$1675, and the Roadster, \$1625. We also make a "30" Touring Car, \$1145, and Roadster, \$1110; a "22" Roadster, \$785. All cars fully equipped, prices f. o. b. factory.

You should buy a Maxwell because

It holds the world's speed record in its class. It is the national touring champion—winner of the Glidden Tour. It lasts longest—proven by actual State registrations. It costs less to maintain—proven by public demonstration.

Deliveries Now

Dealers everywhere are prepared to make deliveries at once. We will be glad to send you the advanced Catalogue for 1913. Write for it.



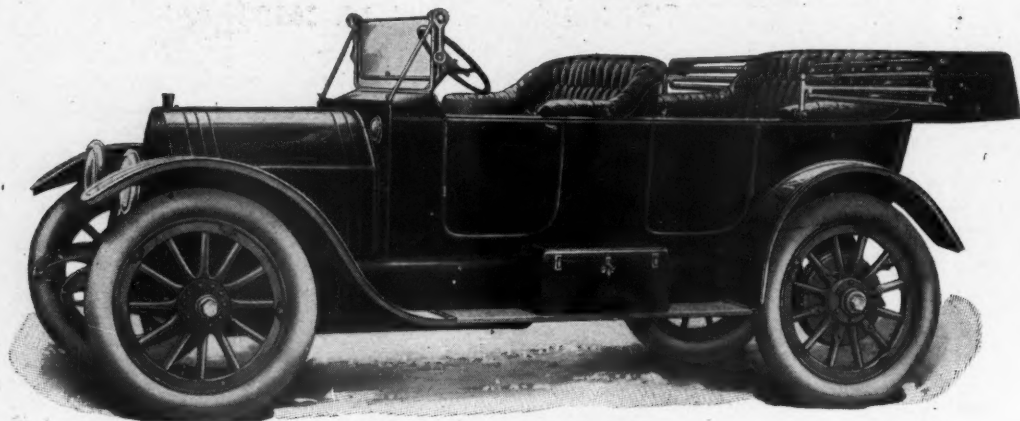
United States Motor Company
Maxwell Division

4 West 61st Street

New York City



America's First Car Still Its Foremost



Electric Starting **HAYNES** Electric Lighting

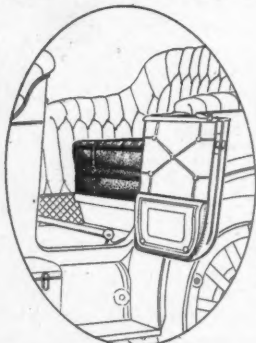
A BIG, powerful, roomy motor car. So graceful in its lines and so beautiful in its finish that no car can surpass it in appearance and style. So complete in its appointments and its provisions for comfort that we know of nothing which could be added. Luxurious in its twelve-inch deep, fine hair cushions. Quiet and handsome. Always ready to start—right from the driver's seat—without the turn of a crank. Sturdy, for years of service.

Such, in brief, is the newest Haynes, Model 22. The demand for this perfect, complete automobile—into every part and every line and every feature of which has been built nineteen years of Haynes experience—has been instantaneous and insistent.

America's oldest car—America's first car—is now truly America's first car in point of efficient completeness and the luxury of the car. The Haynes Company has not trimmed its quality of workmanship in a single detail. On the contrary, there has been a betterment, made possible by the almost daily improvement of factory equip-

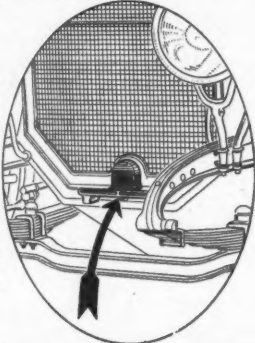
ment and manufacturing processes. In quality of materials and workmanship—in all the little details of mechanical precision—the newest Haynes equals or excels any of the previous Haynes Models which have so firmly established Haynes character—and Model 22 offers much that no previous Haynes or any other car ever has offered. It has true beauty of design; such roominess as you never saw in any other automobile; the very extreme of comfort, to please those who seek luxury; and an electric starting and electric lighting equipment of utmost simplicity and absolutely 100 per cent efficiency.

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It is quite impossible to express fully by illustration the luxury of Haynes Model 22 upholstery. The cushions, slightly tilted downward at the rear, are of fine hair and **TWELVE INCHES THICK**, the deepest cushions ever used in American cars. All our upholstery is of our own manufacture and the covering is finest hand buffed leather.

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Haynes Automobile Co., 501 Union St., Kokomo, Ind.

FACTORY BRANCHES IN NEW YORK, CHICAGO, SAN FRANCISCO, INDIANAPOLIS



MOTOR AGE



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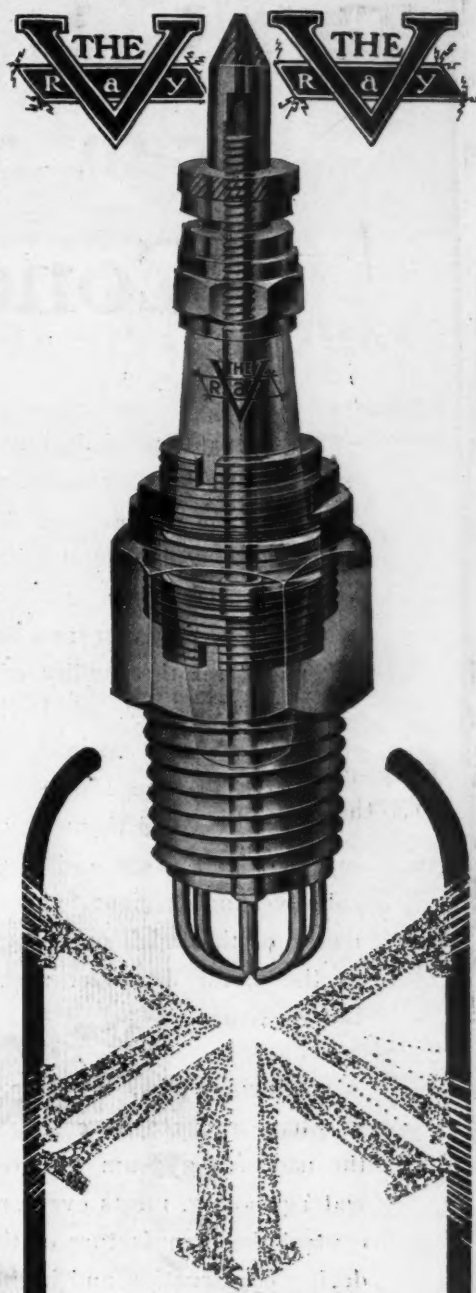
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Contents

SPEED MERCHANTS GATHER AT MILWAUKEE.....	5
Grand prix, Vanderbilt and small-car races will be run next week over a new course and with fields comprising the pick of fast cars and star drivers—Description of the circuit	
STONE ROAD FROM COAST TO COAST PLANNED.....	11
Motor car makers asked to contribute percentage of gross receipts to buy crushed rock for transcontinental highway	
EDITORIAL	12
RELIABILITY RUN AROUND LAKE MICHIGAN.....	13
Chicago Motor Club undertakes promotion of sensational contest through comparatively unknown region	
PEUGEOT ONCE MORE MAKES CLEAN SWEEP.....	14
Zuccarelli wins 183-inch class in Le Mans road races, while Goux captures big-car division—Boillot shines at Boulogne	
NEW YORK ELECTRIC DEALERS GET TOGETHER.....	16
Association is formed for purpose of stimulating trade in this branch of the industry—Motor mart proposed.	
HUBER PATENT THREATENS TO MAKE TROUBLE.....	17
Three-point suspension claims being pushed by inventor who declares he will test their validity in the courts	
CANADIANS INTERESTED IN CAR DISPLAY.....	18
Toronto exhibition attracts a half-million dollars' worth of pleasure and commercial motor vehicles	
BURMAN CUTS MILE MARK IN JUMBO BENZ.....	19
Dirt track record reduced to 47.85 seconds at Brighton Beach—Minneapolis meet results	
MODERN TRAFFIC CODE USED IN WASHINGTON.....	20
District of Columbia puts into force latest ideas in regulations	
AMONG THE GOOD ROADS ENTHUSIASTS.....	29
Michigan reports on highways cost—Blazing Meridian trail	
THE PREMIER LITTLE SIX MAKES ITS DEBUT.....	34
Description of a new model just put out	

DEPARTMENTS

Coming Motor Events.....	13	In Realm of Commercial Car...	38
Manufacturers' Communications	22	From the Four Winds.....	42
Motorists' Bookman.....	23	Current Motor Patents.....	44
Routes and Touring Information		Among Makers and Dealers....	46
Department	24	Development Briefs	48
Readers' Clearing House.....	30	Brief Business Announcements..	50



"GUARANTEED FOR LIFE" (Porcelain and All)

Just as manufacturers of talking machines depend for profit on the records they sell, and makers of safety razors on the blades they dispose of, so do makers of inferior spark plugs look to "repeat" porcelain orders for sustenance.

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The demand has been large for this room. We have reduced its cost nearly one-half by the use of a gypsum wallboard, which, after water-proofing, meets every requirement. We control the manufacture of this wallboard for drying construction and it should not be confounded with other wallboards. Its interior is gypsum and wood fiber, covered at either side with a thick compound similar to asbestos paper, the outer surface being strengthened as well as water-proofed by our preparation.

We are the only manufacturers installing a varnish drying-room complete in perfect econ-

omy of operation and construction at a moderate price. Our later patent, No. 1,036,323, showing our improvement on this room, makes the fourth issued us on Condensing Dryers.

CAUTION! We own the only patent in a condensing method ever issued by the Patent Office, showing steam pipes on one side and condensing pipes on the other. We were the first to employ this construction. You can hardly expect us to give our discoveries to others free. If you are using this method not purchased of us, we shall ask you to pay the owner.

One implement manufacturer, using 150,000 square feet of floor room for painting and varnishing, will have 125,000 square feet of this to use for other purposes by employing our process. We are glad to quote you either for the apparatus and license to operate or will, if you desire, install the rooms complete. With a different arrangement of piping, we use the same room for drying lumber and veneered stock. We have increased our manufacturing facilities and, while we like from thirty to sixty days' notice, our customers so far have experienced very little delay; but if you have not already installed you should order promptly.

The A. H. Andrews Company
115-117 South Wabash Ave., Chicago, Illinois

MOTOR AGE

Speed Merchants Gather at Milwaukee



WISCONSIN, VANDERBILT, GRAND PRIZE AND PABST TROPHIES OFFERED FOR MILWAUKEE COMPETITION

Grand Prix, Vanderbilt and Small-Car Races Next Week

MILWAUKEE, Wis., Sept. 10—For the first time away from their native heaths, the grand prix of the Automobile Club of America and the W. K. Vanderbilt, Jr., cup will be contested for in the middle west next week over a brand new 7.8-mile road circuit in the town of Wauwatosa, Milwaukee county, Wisconsin, provided by the Milwaukee Automobile Dealers' Association. In keeping with custom, the M. D. A. has hung up two additional trophies which are bound to become of international note, the Colonel Gustave Pabst trophy and the Wisconsin Challenge cup, deeded by Milwaukeeans for the light and medium car events.

The Vanderbilt has been given the place of honor as the wind-up of the carnival, changing places with the grand prix, which has heretofore been run following

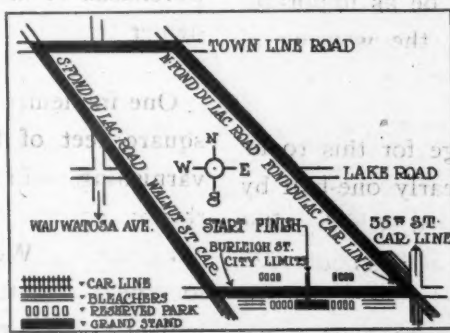


DIAGRAM OF WAUWATOSA COURSE

New Course at Wauwatosa Built for the Big Road Races

it. In obedience to the requirements of the governing bodies, the A. A. A. and A. C. A., there will be an interval of 2 days between the grand prix and the next event, which will be double light-car bill, and 3 days between the features.

For this, the first international racing competition in the very heart of the American continent, as convenient of approach from the Pacific as from the Atlantic coasts and intervening territory, the promoter, the M. A. D. A., has hung up \$20,250 in gold coin to supplement the valuable gold cups as prizes.

Approximately \$25,000 has been distributed over a circuit of a little less than 8 miles of the finest country highways to be found in the vicinity of Milwaukee, forming a cup race course, which, although entirely new, should



STRAIGHTAWAY ON TOWN LINE ROAD READY FOR OILING



MAGNIFICENT BEND AT CEMETERY TURN, WHERE WALNUT STREET CAR LINE ENDS

have unlimited possibilities of speed, at the same time offering opportunity for spectacular work to satiate the hunger of the thousands of newly-made road racing enthusiasts whose knowledge of cup competition has been gained from reading the accounts of the Long Island and Savannah races of past years.

Friday, the 13th, despite its association with jinx and hoodoos, has been set as the day for the opening of the course to the drivers for first practice. This leaves but 4 days of practice running, but the pilots already here believe this sufficient, as all who run in the last three events will have 2 additional days for tuning up after the grand prix is run.

List of Probable Starters

Although entries for the grand prix closed Tuesday night, nothing like a complete list of contestants in the first event, nor in any of the other events, will be available until Thursday evening, when Official Starter Fred J. Wagner, who is

handling the entry list for the M. A. D. A., arrives in Milwaukee. The known entries for the grand prix already filed in Race Manager Ruddle's office, together with checks to cover the entry fee, are as follows:

Car and entrant	Driver
Benz 1911 racer, Erwin Bergdoll.....	Bergdoll
Benz, E. A. Moross.....	Burman
Benz, Benz Import Co.....	Not named
Fiat 70, E. E. Hewlett.....	Tetzlaff
Fiat 90, Fiat Auto Co.....	Bruce-Brown
Fiat 90, Fiat Auto Co.....	Bragg
Mercedes, E. J. Schroeder.....	De Palma
Mercedes, Spencer Wishart.....	Wishart
Mercedes, W. H. Bertrand.....	Clark
Mercedes, Mercer Auto Co.....	Hughes
Knox Six, Ralph K. Mulford.....	Mulford
Cino, Haberer & Co.....	Jenkins

Manager Ruddle stated late last night that Starter Wagner wired Tuesday afternoon that he expected to close up several more entries before the closing hour, making a total list of seventeen or nineteen cars in the grand prix.

The Vanderbilt list will not close until Saturday night, September 14, but the M. A. D. A. already has these cars and drivers on the books for the September 21 event:

Benz, Benz Auto Import Co.....	Burman
Benz 1911 racer, Erwin Bergdoll.....	Bergdoll
Case, J. I. Case T. M. Co. Disbrow and Nikrent	
Case, J. I. Case T. M. Co.....	
.....Jagersberger and Bill Endicott	
Cino, Haberer & Co.....	Jenkins
Fiat 70, E. E. Hewlett.....	Tetzlaff
Fiat, Fiat Auto Co.....	Bruce-Brown
Fiat, Fiat Auto Co.....	Bragg
Mason Spl., F. S. Duesenberg.....	Roberts
Falcar, Fal Motor Car Co.....	Trussel
Falcar, Fal Motor Car Co.....	Hastings
Knox Six, Ralph K. Mulford.....	Mulford
Lozier Six, Richard H. Knowles.....	Nelson
Stutz, Ideal Motor Car Co.....	Merz
Stutz, Ideal Motor Car Co.....	Anderson
Mercedes, Mercer Auto Co.....	Hughes
Mercedes, Mercer Auto Co.....	Wishart
Mercedes, E. J. Schroeder.....	De Palma
Mercedes, W. H. Bertrand.....	Clark

For the Pabst and Wisconsin Challenge competitions, to be run co-incidentally on Friday, September 20, the entry lists close Saturday night, and at present Manager Ruddle has a very incomplete enrollment to report. Among the entrants will be:

PABST TROPHY

Car and entrant	Driver
Case, J. I. Case T. M. Co.....	Disbrow
Case, J. I. Case T. M. Co.....	Jagersberger
Cino, Haberer & Co.....	Jenkins
Falcar, Fal Motor Car Co.....	Hastings
Falcar, Fal Motor Car Co.....	Trussel
Mason Spl., F. S. Duesenberg.....	Roberts
Mercedes, Mercer Auto Co.....	Hughes
Mercedes, Mercer Auto Co.....	Pullen
Mercedes, Mercer Auto Co.....	Wishart

WISCONSIN CHALLENGE TROPHY

E-M-F, Studebaker Corp.....	Witt
E-M-F, Studebaker Corp.....	Evans
Mason, F. S. Duesenberg.....	H. Endicott
Mason, Mason Auto Co.....	Roberts
Mason, Mason Auto Co.....	Not named

Course Easy to Reach

The course is the easiest of access from the center of population that has ever been provided for either Vanderbilt or grand prix. In fact, one corner of the circuit touches the northwestern city limits of Milwaukee, and the home stretch runs along the city limits for about ¼ mile. The course is directly approached by three trunk street car lines, one of

HISTORY OF THE GRAND PRIX AND VANDERBILT CUPS

GRAND PRIZE						
Year	Distance Miles	Starters	Finishers	Winner	Time	Miles per Hour
1908	402	20	9	Wagner, Fiat	6:10:31	65.111
1909—No race						
1910	415	15	6	Bruce-Brown, Fiat	5:53:05	70.55
1911	411.36	14	5	Bruce-Brown, Fiat	5:31:29.13	74.47
VANDERBILT						
1904	284.4	18	2	Heath, Panhard	5:26:45	52.2
1905	283	20	4	Hemery, Darracq	4:38:08	61.4
1906	297.1	18	5	Wagner, Darracq	4:50:10	60.8
1907—No race						
1908	258.6	19	2	Robertson, Locomobile	4:00:48	64.3
1909	278.08	15	2	Grant, Alco	4:25:42	62.8
1910	278.08	30	10	Grant, Alco	4:15:58	65.18
1911	291.38	14	6	Mulford, Lozier	3:56:00.67	74.07



SHOWING HOW SHARP SOMERVILLE TURN AT NORTHWESTERN CORNER OF COURSE HAS BEEN CUT AWAY

which has been extended to the home stretch for the purpose.

The Fond du Lac avenue line, the downtown terminus of which is, for practical purposes, at the corner of Grand avenue and West Water street, runs directly to the southeastern corner of the course, while the Walnut street line, originating at Grand avenue and West Water streets, runs directly to the southwestern corner. The Thirty-fifth street north and south cross-town line, which is fed by twelve main city lines running due east and west across the city, meets the Fond du Lac avenue line at its terminus on the course. Center street and North avenue, two principal east and west cross-town lines which do not run into the downtown section, but approach the course, are fed by a dozen city lines. The Chicago, Milwaukee and St. Paul, the Chicago and North-Western and Chicago, Sparta and North-Western steam roads go around the course for practically two-thirds of its length.

Plenty of Accommodations

There will be accommodations for all who come, even if the crowds outnumber 150,000. The newspapers have opened registration bureaus for residents who have spare rooms, and already 8,700 rooms have been placed at their disposal. The aggregate number of rooms in the city hotels is in excess of 2,700, which, when swelled for purposes of handling crowds, can take care of 80,000 persons. Beds and cots in banquet halls, assemblies and other parts of the hotels not ordinarily used for sleeping purposes, will give good accommodations for every one who seeks a pillow.

Construction of the grandstands, judges'

stands, press tower, bleachers, the pit sections, and other building work, was begun Sunday morning. The start and finish line is on Burleigh street, midway between the North and South Fond du Lac roads. The

grandstands will be on the south side of the home stretch, the pits being directly in front of the box sections, on the right hand side of the drivers. The judges', press and administration buildings will be

PROGRAM FOR MILWAUKEE'S ROAD RACING CARNIVAL

GRAND PRIX

Date—Tuesday, September 17, 1912, starting at 10 a. m.

Distance—Fifty-two times around the 7.8 mile course, or approximately 409.86 miles.

Conditions—The race shall be run under the racing rules of the Automobile Club of America, and such additional rules as may be adopted by the contest committee of the A. C. A.

Entry Fee—One car, \$1,000; two cars, \$1,500; three cars, \$1,750, of the same manufacture.

Prizes—To the winner, the grand prix, a gold challenge cup given by the Automobile Club of America, valued at \$5,000, and \$5,000 in gold coin given by the Milwaukee Automobile Dealers' Association; second prize, \$2,500; third prize, \$1,250; fourth prize, \$750; and fifth prize, \$500.

VANDERBILT CUP

Date—Saturday, September 21, 1912, starting at 11 a. m.

Distance—Thirty-eight times around a 7.8 mile course, or approximately 298.5 miles.

Conditions—The race shall be run under the racing rules of the American Automobile Association; it shall be a class E, non-stock event, open to class C cars of 301 to 600 cubic inches piston displacement.

Entry Fee—One car, \$500; two cars, \$800; three cars, \$1,000, of the same manufacture.

Prizes—To the winner, the William K. Vanderbilt, Jr., cup and an additional award of \$3,000 in gold coin given by the M. A. D. A.; also a donor's trophy for permanent possession by the winner; to the winner of second place, \$2,000 in gold coin by the M. A. D. A.; third, \$1,000; fourth, \$500.

PABST BLUE RIBBON TROPHY

Date—Friday, September 20, 1912, starting at 12 m.

Distance—Twenty-eight times around the 7.8 mile course, or approximately 220.6 miles.

Conditions—The race shall be run under the racing rules of the A. A. A.; it is open to class C, non-stock, division 3C, for cars of 231 to 300 cubic inches piston displacement.

Entry Fee—One car, \$250; two cars, \$400; three cars, \$500, of the same manufacture.

Prizes—To the winner, the Pabst Blue Ribbon trophy, deeded by Colonel Gustave Pabst, of Milwaukee, for perpetual competition, plus a secret purse sealed in the cup; and an additional award of \$1,000 in gold coin by the M. A. D. A.; to the winner of second place, \$500 in cash; third, \$250 in cash; fourth, \$125 in cash. A special donor's trophy accompanies the award of the Pabst trophy.

WISCONSIN CHALLENGE TROPHY

Date—Friday, September 20, 1912, starting at 12 m.

Distance—Twenty-two times around the 7.8 mile circuit, or approximately 173.4 miles.

Conditions—The race shall be run under the racing rules of the A. A. A.; it shall be open to class C, non-stock, division 2C, for cars of 161 to 230 cubic inches piston displacement.

Entry Fee—One car, \$250; two cars, \$400; three cars, \$500, of the same manufacture.

Prizes—To the winner, the possession of the Wisconsin Challenge trophy, a perpetual prize deeded by the Wisconsin Motor Mfg. Co. of Milwaukee, and a special donor's trophy for permanent possession; and an additional award of \$1,000 in gold coin by the M. A. D. A.; to the winner of second place, \$500 in cash; third, \$250 in cash; fourth, \$125 in cash.



GRANVILLE TURN AT NORTHEAST CORNER OF COURSE

on the north side, directly opposite. Bleachers will be erected at the big curve at the junction of Thirty-fifth street, Fond du Lac avenue and Burleigh street. Two smaller bleacher sections may be located in the middle of the two 3-mile straightaways.

Description of the Course

The Wauwatosa course is a quadrangle lying wholly within the township of Wauwatosa, Milwaukee county, Wisconsin. Four straightaways, each pair approximately paralleling each other, all of them as straight as an arrow, have been selected to form the cup course. While most of the road racing courses of America and Europe have either touched and passed through a town or city, the Milwaukee course is the first which actually touches, at any point, the city limits of a large metropolis, such as Milwaukee is with its 410,000 inhabitants. The advantages of such close connection with the source of the revenue-producing crowds is obvious. Citizens of Milwaukee will have but a stone's throw to go to reach the course, while the thousands who will come from other places throughout America and are quartered in the hotels and boarding houses of the city will not have to break their necks to catch trains at early hours to reach the scene of hostilities.

The start and finish line is located in the center of the Burleigh street straightaway which comprises the south leg of the course. The grandstands, judges' and press towers and administration buildings are thus placed mid-way between the two most important street car lines and roadways leading directly to the course, these being the Fond du Lac avenue car line, which approaches the course at its southeastern corner, and the Lisbon avenue line, running up to the southwestern corner. For convenience in reaching the course, this arrangement cannot be excelled.

The Burleigh straightaway is approxi-

mately 8,953 feet in length, and from the start and finish line the cup racers will head due east on Burleigh street for a distance of .6 mile, striking the city limits of Milwaukee at Sherman park, just beyond which they will turn into the North Fond du Lac road, which is a 14,270-foot straightaway. Instead of making the hairpin turn which the old established roadways would make obligatory, were Burleigh street followed to its junction with Thirty-fifth street and Fond du Lac avenue at the city limits, the Milwaukee promoters have followed the line of Thirty-sixth street in making an easy turn, cutting off a triangle measuring approximately 125 feet on all three sides. The two outside legs of the triangle are used for bleachers arranged in V-shape, one side following the line of Burleigh street and the other the line of Fond du Lac avenue.

The so-called City Limits turn is the best of the four corners of the course, the

M. A. D. A. having intentionally reduced it to an easy round because of the short distance the cup racers will have to go from the start and finish line to get into North Fondy road. Assuming that the contesting cars will try to make as high a speed as they are capable of in going down Burleigh street past the grandstands, it was found advisable to form a suitable turn to permit of a continuation of the high speed .6 mile beyond the stands without any considerable risk to the drivers. On the City Limits turn, the road widens from the uniform width of 40 feet on the home stretch to 120 feet, which is continued at that width until the turn ends up in North Fondy road, which is 40 feet wide for a distance of approximately 500 feet, then being reduced to the uniform 30-foot width. The outside circumference of City Limits turn stands 4 feet higher than the inner circumference, the bank being comparatively slight in deference to the wishes of a majority of the drivers, who do not favor radical banking of turns for road racing.

Road Old Military Trail

The course runs due northwest from City Limits turn for a distance of approximately 3 miles along North Fond du Lac road, an old military trail which formed the principal exit from the settlement of Milwaukee 75 years ago. The road is one of the oldest and most solid highways in the vicinity of Milwaukee, the foundation of the road being 4 feet deep, beginning with dirt, gravel and then No. 2 crushed stone, upon which has been placed another 6 inches of No. 2 rock, with 2 inches of screenings mixed with a 70 per cent asphaltum oil composition as a surface. This method of surfacing has been followed throughout.

At Town Line crossing, the northeastern corner of the quadrangle, the course turns due west at an angle of 120 degrees into the Town Line road, a straightaway of



CURVE FROM BURLEIGH STREET INTO NORTH FOND DU LAC ROAD

5,495 feet, which for half the distance from North Fondy road is a slight upgrade. The turn is flat, no banking having been done. Town Line road has been widened from 16 and 18 feet to a uniform width of 30 feet and has been made straight as the edge of a ruler. From the crest of the grade, half-way between the two long legs of the course, it follows a slight downgrade to the South Fond du Lac road, a companion to the North Fondy straightaway in every particular excepting variable grades.

Town Line Turn a Hairpin

The turn from Town Line into South Fondy is a hairpin, the inside of the round before it was touched being a bare 45 degrees. This was considerably increased by cutting away a triangle of 45 feet, but, with the improvement, it will form the most difficult curve of all to be negotiated. As Town Line road runs due west and South Fond du Lac road runs due south-east, the nature of the turn may easily be pictured in the mind.

To eliminate as much of the danger of this curve as possible, the M. A. D. A. has banked the round approximately 6 feet, measuring across the greatest width of the round from inner to outer circumference. In addition, the reconstructed macadam roadway has been given a layer of 4 inches of cement of somewhat coarser composition than the best grade used for the construction of sidewalks in the city of Milwaukee.

After this turn, known as Sommerville curve, the course follows a straight line for exactly 12,500 feet along the South Fond du Lac road, which has been given a uniform width of 30 feet. South Fondy road is of a rolling nature, and contains three rather short but slight rises or knolls, two of which are only 375 feet apart and located near the center of the straightaway stretch.

Five hundred feet before the course en-



GRANVILLE TURN, FACING DIRECTION IN WHICH CARS WILL COME

ters Graveyard curve to make the home stretch in Burleigh street, South Fondy road is widened to 40 feet. The curve, which goes around Wanderers' Rest cemetery, had a natural angle of 120 degrees, which has been retained excepting that the outside of the curve has been built up 2 to 3 feet. The greatest width of the roadway throughout the curve is 72 feet, somewhat wider than believed necessary because of the easy nature of the turn. It will be possible for the cup racers to swing into Burleigh street without perceptible slackening of speed developed on the South Fondy straightaway, pounding over the Burleigh street home stretch and across the start and finish line at a tremendous clip.

In comparison with the Savannah course, over which the grand prix has been run several times, and the Vanderbilt cup for the first time on Thanksgiving day of 1911, the Milwaukee course looks mighty good.

It is only one-half as long, or 8 miles against 17. Instead of winding about in a tortuous circuit, as the Savannah course does, Milwaukee has a four-legged speedway that is almost a parallelogram, all sides of which are straight as arrows. The famous Waters road straightaway at Savannah offers nothing better than the North Fond du Lac road stretch at Milwaukee. Ferguson, LaRoche or Dule avenues, on the Georgian course, are no better stretches than Town Line, Burleigh or South Fondy roads in Milwaukee.

Every inch of the Milwaukee is high and dry, that is to say, no part of it has a semblance to swampiness, which means a firm, hard roadbed on a solid foundation that is not likely to crumble under excessive weight or high speed. The area included in the four legs of the course is between 350 and 400 feet above the level of Lake Michigan and approximately 650 feet above the sea level, taken as a standard in measurement by the United States geological survey.

Rich Farms Surround Course

The course is bounded by farms of unusual fertility, the soil in this territory having first seen the hoe and plow more than 80 years ago. The lands are owned by agriculturists classed well-to-do, evidence of which may be found in the well-kept farm buildings and the fine residences. That these farmers are progressive is proven by their alacrity in giving their rights to the public highways for a monster speed carnival and giving the promoter thereof, the M. A. D. A., the customary rights to the use of their acres and frontages for the various purposes of a road race.

In reconstructing the roads used for the Vanderbilt course, the Milwaukee Automobile Dealers' Association called upon the Wisconsin state highway commission for the services of its engineering staff and experts. One reason was that the as-



HAIRPIN TURN AT SOMERVILLE, WHICH IS BEING CONCRETED

United Motors in Hands of Receivers

**Involuntary Bankruptcy Proceedings Started in New York Against Big Holding Concern—
Suit Is of Friendly Nature—Liabilities Placed at \$12,250,000 and Assets at \$15,300,000—W. E. Strong and Robert S. Walker in Charge of Affairs**

NEW YORK, Sept. 12—Special telegram—Involuntary bankruptcy proceedings of a friendly character were entered against the United States Motor Co. late tonight in the United States district court before Judge Charles M. Hough, of the southern district of New York. The petitioning creditor is The Brown & Sharpe Mfg. Co. The parties to the suit are the United States Motor Co., Alden-Sampson Mfg. Co., Brush Runabout Co., Columbia Motor Car Co., Dayton Motor Car Co. and the Maxwell-Briscoe Motor Car Co.

Judge Hough forthwith named W. E. Strong, of the Central Trust Co., and Robert S. Walker, formerly head of the Rock Island system, as receivers under bond of \$150,000. The bond was originally placed at \$75,000, but owing to the fact that ancillary proceedings will be instituted immediately in Indiana, Ohio, Michigan, New Jersey, Connecticut, Rhode Island and Massachusetts, the amount of the tentative bond was doubled.

Liabilities and Assets

The liabilities of the company are estimated at \$12,250,000, and the assets, consisting of cash, bills receivable and securities of subsidiary and other corporations, are valued at \$15,300,000. The assets are largely embraced by the factory plants of the subsidiary companies, which are scheduled at \$6,250,000, against which there is a secured indebtedness of \$200,000. The quick assets as of July 31 amounted to \$9,250,000. Factory inventories, which represent an item of \$4,000,000, are included in the foregoing item, as also is the amount of \$2,500,000, which represents all the cash on hand and bills receivable.

The liabilities of the company consist of \$6,000,000 of debenture bonds, while the remainder, amounting to \$6,250,000, consists largely of the merchandise and banking claims against the company.

Ever since the early days of last spring it has been apparent that some sort of reorganization would have to intervene in the affairs of the embarrassed company, which was seriously crippled by slowness in deliveries owing to the backward season. The regular dividend was passed in February, and the securities of the company fell sharply in the markets of trade. This led to a withdrawal of credit and together with the bad weather, finally forced the company to ask for an extension of time on its obligations.

On June 15 such an extension was granted to carry the company past the end of the selling season, it being deemed

advisable to allow the 1912 stock to be marketed by the company itself rather than through a receivership.

This was done and W. E. Strong, who has just been named as one of the receivers of the company, took charge of its financial affairs and was elected chairman of the board of directors. Both the banking and merchandise creditors formed committees to conserve their interests and from the two committees an advisory board was formed.

It had been apparent from the first that a large amount of money would have to be raised in order to put the companies on a businesslike footing, and when it was found impossible for the creditors to reach an agreement that would make possible the new financing, the only thing left was a receivership.

Appeal to the courts, according to practically everybody interested in the matter, does not mean that the end of the company is at hand. On the contrary they say that under the receivership much aggravating delay and expense can be saved by having the federal court take jurisdiction. It is also pointed out that when the time comes for reorganization some plan to assess the stock or wipe it out can be accomplished with more dispatch than such an end could be accomplished without a receivership.

The date to which the extension goes is Friday, and the sudden determination to file proceedings was taken in order to forestall extraneous legal proceedings in the state courts and elsewhere.

The whole trouble with the company is

[Continued from page 9.]

sociation rebuilt public highways and received permission for so doing in consideration of the fact that after the races the roads would in reality be improved public roads, as defined by the highway commission. Another reason was that car dealers are not road builders, although they are among the greatest enthusiasts for improved highways from the very nature of their business.

W. C. Hughes, the engineer who surveyed the course, has made the following report to the Milwaukee Automobile Dealers' Association:

This is to certify that I have measured the proposed course for the Vanderbilt cup and grand prix races, covering North Fond du Lac Road, Thirty-sixth street and Town Line road, South Fond du Lac road and Burleigh street, said measurements being taken in the center of each road around the circuit. I find the stretches of each road to measure as follows: North Fond du Lac road, 14,270 feet; Thirty-sixth street, 400 feet; Town Line, 5,495 feet; South Fond du Lac road, 12,500 feet; Burleigh street, 8,953 feet; total distance, 41,618 feet, or 7.882 miles.

lack of ready money. Several of the subsidiaries are in excellent shape individually, particularly the Maxwell-Briscoe Co., in which plant the book value of the stock is 100 per cent of its value, but owing to the combination of circumstances the funds that must be devoted to caring for current needs, back debts and for financing the 1913 manufacturing campaign, are short of the required amount.

In the bill of complaint it is stated that the receivables so owned by the subsidiary companies are in many instances not immediately capable of collection in any way, and that the motor company is liable upon the entire indebtedness.

That through the indiscriminate issue to banks and others of promissory notes now outstanding as aforesaid, intricate and involved questions exist as to the equities and rights of the defendant companies as between one another, which can be adjudicated only through one suit in equity wherein all such questions can be determined.

Conditions Are Outlined

In another section of the bill the following condition is outlined: While the motor company and the subsidiary companies have a large amount of supplies and materials on hand and there are in the hands of the selling companies for sale completed motor cars to the value of about \$2,000,000, on July 31 the conditions of the motor industry were such that said finished product could not be sold in time to provide for the payment of the matured and maturing obligations of the said companies and neither the Motor company nor the subsidiary companies have now adequate or sufficient funds and are unable either by realizing upon their quick assets, even at a great sacrifice or by securing further loans, or otherwise, to meet their current obligations which have already matured and will mature in the near future, and in view of the present financial condition of said company it will be impossible for any of them in the near future to raise by loans or otherwise sufficient funds to enable them to prosecute their business.

ELMORE PLANT CLOSED DOWN

Clyde, O., Sept. 7.—The plant of the Elmore Mfg. Co., Clyde, O., was closed down last Tuesday, laying off 200 men. It is stated that the plant will be dismantled and the machinery moved elsewhere, but officials of the company are most reticent as to what their future plans will be. No reason for closing down the plant is given.

Stone Road from Coast to Coast Planned

Carl Fisher and J. A. Allison Make Practical Proposition to Construct Transcontinental Highway—Motor Car Makers Asked to Contribute Percentage of Gross Receipts to Purchase Crushed Rock for Such a Purpose—Indianapolis Willing

NEW YORK, Sept. 9—One of the biggest plans for building a stone road from New York to San Francisco was made known in Indianapolis and Detroit today when it was announced that a movement has been started with the motor car and accessory makers in these cities to raise over \$10,000,000 from the motor industry throughout the country to purchase crushed rock for such a roadway, the purchasing and delivering of the rock being a part played by the motor industry. The building of the road will be left to the county and state authorities, with whom contracts will be made to complete the work within a certain time and according to certain instructions before the materials are turned over to them.

The plan to raise the \$10,000,000 from the motor industry is one of the most practical and rational yet suggested in the good roads field. This sum has to be raised by January 1, 1913, a little over 3 months. The plan is to collect from every motor car maker, from every accessory maker, from every car dealer and from owners. With the manufacturers and dealers the plan is to collect a third of 1 per cent each year for 3 years, this amount to be taken from the gross receipts of the company, which will provide a fund much in advance of \$10,000,000. Cash or notes will not be collected but donation slips issued, which slips will be turned over to a bond company to hold until the permanent organization which will care for the purchasing and delivering of the material is organized.

Fisher Originates Plan

The plan originated over 1 year ago in the fertile mind of Carl G. Fisher, of Indianapolis speedway fame, and who during the last 12 months has been accumulating data on the cost of road construction, cost of road materials, cost of cement bridges, cost of cement mile posts, etc. During that time he has talked with many manufacturers to find out if they would co-operate in such a scheme. This work started with the Indianapolis car and accessory manufacturers, all of whom agreed with the scheme and at a meeting held today the movement was launched on its practical course by every one of the makers agreeing on the plan outlined.

In order that every subscriber to the fund will be protected no construction of any nature will be started until the entire subscription has been guaranteed, and if, for any reason, the plan should fail, all moneys will be returned to those having made payment with interest at 3 per cent. By having the required amount guaranteed

by 1913 it will be possible to complete the work by 1915 so that the road may be used by motorists attending the Panama-Pacific exhibition, which opens in San Francisco in the spring of 1915.

Instead of getting all of the financial assistance from the manufacturers and dealers, the plan includes the co-operation of all car owners in the country. This is possible by three classes of membership, one a \$5 class another a \$100 class and a third of a \$1,000 class. Radiator emblems of different types will be issued to each member according to his class, and special wall or window medals issued to all dealers who contribute a total of 1 per cent of their gross receipts to the fund in 3 years. **No Particular Route in Mind**

The plans do not call for any particular highway route across the states. At present there are two or more transcontinental highways and the matter of deciding whether either of these or a different one is to be selected will be left to a commission of motoring interests. All moneys collected or subscribed for the road will be used in the actual purchase of material, which is purchased on a price which covers delivery at the railroad siding where needed. Prices for material range from 90 cents to \$2 per cubic yard, depending on the distance the material has to be hauled. A conception of the amount of rock required for such a highway can be gained from the fact that a roadway 9 feet wide and with rock 12 inches deep cost \$1,750 a mile for material. This proposes a short haul. Although by route it is 3,300 miles from ocean to ocean, little more than 2,200 miles of transcontinental highway would call for stone construction, as there are approximately 900 miles of improved streets in cities, town and villages on this course. This fact alone considerably reduces the problem of building such a highway. The fund of \$10,000,000 will give approximately \$5,000 a mile for road material, and since road material represents from only 30 to 50 per cent of the cost of building a road, it means that instead of a \$10,000,000 road across the country, there will in reality be a \$25,000,000 one.

The actual building of the road will be under the state and county authorities, to whom the materials will be turned over. The states and counties will sign contracts to build the roads under government inspection. Mr. Fischer has discovered that some of the best roads in northern Indiana and northern Ohio have cost but \$1,750 a mile for material. It is natural that building a stone road in Iowa the material will

cost more because of the long haulage. This will amount to not more than \$800 a mile for any part of the country.

Many additional plans are being furthered in connection with this transcontinental scheme, one of which is the erection of sign posts, one for each donation of \$1,000 secured on the plans outlined. Each post would carry a bronze plate containing the name of the donor. Such posts will cost \$12 each.

Still another plan is that of entering into arrangements with the telephone companies whose lines are on the selected highway to secure plugging facilities on the line so that the motorist having a breakdown between cities can immediately get into telephone communication with his dealers, a repairman or garageman. Such a system as this is at present in operation in England and also in certain sections of southern California.

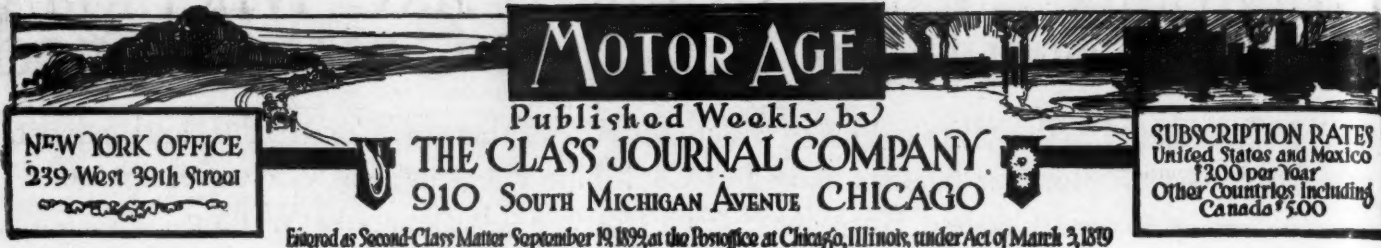
The possibilities of travel on a transcontinental highway of this nature are unlimited. Supposing 25,000 cars were to make a return trip over such a highway, occupying 40 days. If each car carried 4 people, the daily cost would be \$25, or \$800 for the round trip. At this same rate there would be an expenditure of \$20,000,000 for the 25,000 cars. While this is a broad calculation so far as the number of cars is concerned, it will, however, serve to show the value to the towns and cities passed through of such a highway. Real estate values would increase all along the route.

Indianapolis Contributes

Indianapolis, Ind., Sept. 11—At a dinner given the business interests of this city at the German house last night, Carl G. Fisher and James A. Allison announced a project for building a rock highway from New York to San Francisco, to be completed April 1, 1915, in time for the Panama-Pacific Exposition.

Approximately \$300,000 was pledged for the project at the dinner. The Henderson Motor Car Co. and the Prest-O-Lite Co. pledged \$50,000 each. The following subscribed one-third of 1 per cent of the gross receipts for 3 years: Prest-O-Lite Co., Wheeler & Schebler, Ideal Motor Car Co., Premier Motor Mfg. Co., Waverley Co., Gibson Automobile Co., American Motors Co., Marion Motor Car Co., Pumpelly Battery Co., Empire Tire Co., Henderson Motor Car Co., C. Off & Co., Gates Mfg. Co., Gus Habich, motor cycle dealer, and G. H. Westing Co., motor cycle dealer.

Fisher goes to Detroit tomorrow to interest the motor car interests in the project.



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Service Reform Needed

YOU shear off differential studs today and crack the bevel gear. A few minutes later by long-distance telephone you get your order for new parts into the Detroit factory less than 300 miles away through your local dealer. After waiting a day, perhaps 2 days, you wire the factory asking where the repair parts are. Back comes a telegram saying the order had not reached the factory. The same day you discover the local agent had the parts in stock, but this was not discovered until 3 days after the break. A few hours later the local dealer completes the repair. Scarcely is it done when the factory repair parts arrive, useless because too late. For the next week there are back-and-forth letters, the factory wanting to charge for the parts, although announcing by wire that an order for them never had been received, and the car owner declaring that he will only pay for one set, as the repair order was placed through the local dealer. Correspondence back and forth continues for 1 month before the matter is finally adjusted, by which time the owner is so discouraged with the situation that he vows to purchase any make of car except this particular one.

THE circumstance outlined above actually occurred, but it was worse in that scarcely was one controversy among owner, dealer and manufacturer closed before another breach was opened. The owner was permanently ostracised. His disgust reached its zenith. As might be expected his car was soon traded in on one of a different make.

A BIG mercantile house in St. Louis broke a truck sprocket. Inside of 20 minutes a wire was sent to the factory 500 miles away, the truck being disabled and out of commission. No word coming from the factory on the following day, and no parts being received, a second message was telegraphed. After waiting, not 1, or 2, but 3 days the part arrived, but for a different model. The owner was as far back as when the break occurred. It was necessary to start all over again. There was another wait of 3 days, and the same wrong part arrived. An investigation showed that the proper part had been asked for, the mistakes were in the service department. A third trial brought once more the wrong part and finally the owner sent his own driver to the factory to get the part.

ONLY one result can follow such service. The owner was immediately in the market for other makes of trucks. He soon made other purchases, his old truck was traded in, a new make got established with the owner. Poor service lost out. This actually happened.

CONTRAST with this the cases of another truck maker, who had made an improvement in his truck, an improved type of clutch was fitted, a radiator of greater capacity added. From the factory a letter went forth announcing that on any convenient Saturday afternoon three factory repair men would call at the owner's garage and from noon Saturday until Monday morning the new clutch would be fitted, the new radiator added, the truck given a road test and made ready for the opening of the week. The convenient Saturday afternoon arrived, so did the repairmen, and so did the repair parts. The work was done, the truck tested, and was ready for Monday morning. There was not 1 cent of charge for the work.

WHAT was the result? A more than satisfied customer. More trucks were needed and repeat orders were placed. Service of this nature is the greatest seller, it gets orders when all other methods fail. It is the quintessence of salesmanship, it is the acme of good advertising.

NOT only are improvements being made today in the branch houses and in the dealers' houses, but also in the home office at the factory. Until a year or so ago many factories had hopelessly inadequate service executives. These departments were in the control of graduated mechanics who while familiar with making repairs were lacking in executive ability—the one essential in a service department. Today one company after another is announcing the engagement of new executive heads for service departments, and letters are mailed broadcast to dealers and owners heralding the news. The awakening is saving the day in not a few sections, and makers instead of placing this service in the expense account should enter it as a regular business investment and a good one at that.

No Stopping Progress

WE are living in a constructive age. Daily evidence is being given of the eventual mastery of every constructive influence. At no period in history has the world moved backward for one single instant, but in spite of all shortsighted hindrances, riding over all obstacles in its way, every new discovery or invention leading to better things has overcome all objections and has taken a place in life.

HOWE invented the sewing machine and his house was wrecked and his machine destroyed by an angry crowd, which imagined in its ignorance that the sewing machine, in the language of the labor agitator, would "take the bread out of their mouths." The sewing machine was adopted, however, in spite of all opposition, and as a result a hundred times more seamstresses, tailors and the like are employed than ever before, getting more money for less work, while everyone is better dressed in consequence.

WHEN the railway was first proposed between London and Manchester the opposition was most bitter. Water travel was much safer, for a speed of 20 miles per hour would take one's breath away. If railways were generally adopted the gases from the stacks of the engines would kill all the birds and the cattle in the fields. Drivers of stage coaches opposed the new transportation, bitterly trying to hold it back, but the railway gained, until today one man out of every six in the United States is in some way connected with railway transportation. Labor has not suffered; but, on the contrary, the laboring man in England can now take his week-end at the seashore, while his grandfather, in all his life perhaps, never stirred ten miles out of his native village.

WHEN motor buses were first put on the streets of London a few years ago the cab drivers objected. A bus was blocked in every way possible by the horse vehicles, and all done that could be done to hinder their adoption; but buses came. There are now no horse buses in use in London by any but private owners. The motor delivery vehicle when adopted instead of putting men out of work will demand more men and of a better standard of living, meaning higher wages and better hours.

Reliability Run Around Lake Michigan

CHICAGO, Sept. 9—The Chicago Motor Club has undertaken the promotion of the most sensational reliability ever carded in this country—a trip around Lake Michigan, a journey which has been made only by a few cars and which is expected to produce interesting results. Part of the way is through almost virgin territory and especially in the wilds of Michigan and the northern part of Wisconsin the going will be far from easy.

This is to be the club's annual contest and is to be run under grade 3 rules, which penalize for time and work and which do not call for a technical examination. Because of the wild country, it is thought that the run will be as destructive of perfect scores as if the technical experts were put on the job. As a publicity proposition, it is thought to be the best announced for several years.

It is planned to start the contest October 21 instead of October 7, a time when there is nothing else on the motor calendar. The run will go through Wisconsin first, with the principal cities probably Milwaukee, Fond du Lac, Oshkosh, Neenah, Appleton, Green Bay, Marinette, Menominee, Escanaba, to St. Ignace, where the cars will be put on a ferry and shipped across the straits, about 8 miles, to Mackinaw City, where the route will run through Michigan, taking in Petoskey, Charlevoix, Traverse City, Cadillac, Grand Rapids, Kalamazoo and thence into Chicago by way of South Bend. This will be a 1,000 miles run and doubtless will last 6 days.

The pathfinding car, a Cutting, will be sent out this week R. S. Clark who will follow the Blue Book data as laid out by J. P. Dods. J. G. De Long will head the expedition.

The motor truck demonstration of the local organization which was to have taken place this week has been postponed because of lack of entries.

BUFFALO'S RELIABILITY ON

Buffalo, N. Y., Sept. 11—This morning at 5:30 o'clock sharp the third annual 800-mile reliability tour of the Automobile Club of Buffalo started from the official parking station at Main and Edward streets. The contesting cars included a McFarlan six, Hupmobile, Krit, R. C. H., Warren-Detroit, Paige-Detroit, two Maxwells and an Amplex. The contest will be known as a class E, grade 3 reliability tour in which contested cars will be classified according to selling price, thus making a field of seven divisions. To the winner will be awarded the Laurens Enos trophy and the Vars trophy, donated by President Vars of the Buffalo Automobile Club, and special trophies will be awarded to winners in each division in which two

Chicago Motor Club Undertakes Promotion of Sensational Contest

or more starters participate. The run is sanctioned by the contest board of the American Automobile Association.

The first day's run will be from Buffalo to Olean by way of Gardenville, Blossom, Elma, Elma Center, East Aurora, South

Wales, Holland, Protection, Chaffee, Yorkshire, Corners, Delavan, Lime Lake, Machias, Franklinville, Cadiz, Ischua and Hinsdale; thence to noon control at Smithport, Pa., by way of Weston, Portville, Duffy, Eldred, Larabee, Corryville, and Farmers Valley. The return trip to Buffalo will be by way of Ormsby, Newton, Mount Alton, Lafayette Corners, Lewis Run, Custer City, Bradford, Limestone, Carrollton, Killbuck, Salamanca, Elkdale, Ellicottville, Ashford, West Valley, East Concord, Glenwood, West Falls, Duels Corners, and Reserve.

Coming Motor Events

September 8-25—San Sebastian rally.
September 11-14—Third annual reliability run of the Automobile Club of Buffalo, Buffalo N. Y.
September 14-21—Annual fall show; Chicago Automobile Trade Association.
September 17—Grand Prix; Milwaukee, Wis.
*September 20—Wisconsin challenge and Pabst Trophy races; Milwaukee, Wis.
*September 21—Vanderbilt road race; Milwaukee, Wis.
September 17-20—Fire engineers' convention; International Association Fire Engineers, Denver, Colo.
September 25-October 6—Agricultural Exhibition and Plowing Matches, Bourges.
September 30-October 5—American Road Congress; Atlantic City.
September—Track meet; Universal Exposition Co., St. Louis, Mo.
October 4-5—Track meet; Sioux City Auto Club, Sioux City, Iowa.
October 5—Fifth annual run of St. Louis Automobile Club; St. Louis, Mo.
October 6—Gallion hill climb.
*October 7—National tour Detroit to New Orleans; American Automobile Association.
October 8—National convention of Electric Vehicle Association of America; Boston Mass.
October 12—Track meet; Rockingham park, Salem, N. H.
October 21—Chicago Motor Club reliability.
October 24-25—Banta Trophy Team match, Chicago Motor Club.
October 26—Los Angeles to Phoenix Road Race.
November 2-3—Splash guard competition; Versailles.
November 6—Track meet; Shreveport Automobile Club, Shreveport, La.

*Sanctioned by A. A. A. SHOWS.

September 23-Oct. 3—Rubber show, Grand Central palace, New York.
September 28-Oct. 6—Exposition agricultural motor cars, Bourges, France.
October 2-12—Fire show, Madison Square Garden, New York.
October 7-12—St. Louis show.
November 8-16—Olympic show; overflow November 22-30 Agricultural Hall.
December 7-22—Paris salon.
January 6-11, 1913—Cleveland show.
January 4-11—Montreal show.
January 11-18—New York pleasure car show; Automobile Board of Trade; Madison Square Garden and Grand Central Palace.
January 11-22—Brussels, Belgium, show, Centenary Palace.
January 20-25—New York truck show; Automobile Board of Trade; Grand Central Palace and Madison Square Garden.
January 20-25—Philadelphia show.
January 25-February 1—Montreal, Canada, show.
January 27-February 1—Detroit show.
February 1-8—Chicago show.
February 10-15—Chicago Truck show.
February 10-15—Minneapolis show.
February 17-22—Kansas City show.
February 24-March 1—Show at Omaha, Neb.
March 3-8—Pittsburgh show.
March 8-15—Boston pleasure car show.
March 17-22—Buffalo show.
March 19-29—Boston truck show.
March 24-29—Indianapolis show.

MAKING LONG CANADIAN TRIP

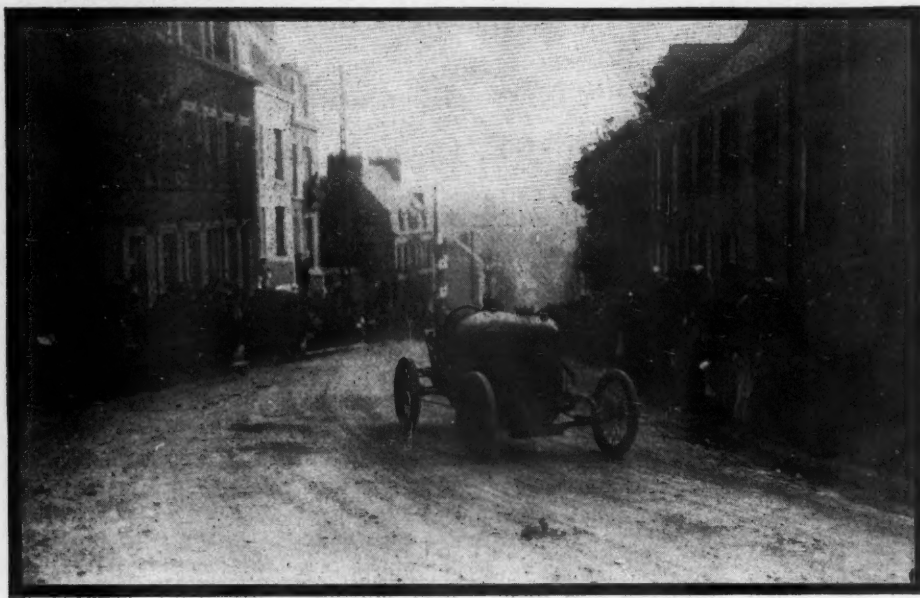
Toronto, Ont., Sept. 9—J. W. Wilby, English motorist, and F. V. Haney, are making a transeontinental trip from Halifax, N. S., to Vancouver, B. C., and on Saturday reached Toronto after making a daily average of 18 miles, having started the tour at Halifax, on August 28. So far no accident of any kind has marred the trip. In discussing the trip, Mr. Wilby states he finds the roads in the province of Ontario to be far superior to those in other provinces. Mr. Wilby believes a Canadian national highway from coast to coast will be constructed in a few years and as, in his opinion, the scenery in Canada is better than in the United States, he believes many American tourists eventually would make the Canadian transeontinental motor trip. The motorists leave this morning for Winnipeg, Man., which they expect to make in 10 days. Owing to there being no roads in the northern part of Ontario the car will have to be shipped for some distance. This is believed to be the first time that a car has made the Halifax-Toronto trip.

PARIS TO TRY ELECTRICS

Paris, Sept. 1—Electric motor vehicles, which never have been very popular in France, are about to be experimented with by the Paris General Omnibus Co., having a monopoly of the bus service in the French capital. The first bus to be put under observation will be of French origin. Later it is intended to experiment with an electric bus fitted with the new Edison batteries. The European company responsible for these batteries claims that a determined effort will shortly be made to get into the French taxicab business with electrically propelled vehicles. The Paris General Omnibus Co. runs about 800 gasoline vehicles and a small number of horse-drawn buses. By the terms of its contract, however, the horse buses must all be abolished at the end of the present year, and the number of gasoline buses in the city at that date will be practically 1,000. Up to the present no serious attempt has been made to introduce electric motor buses into Paris.

Peugeot Once More Makes Clean Sweep

Zuccarelli Wins 183-Inch Class in Le Mans Road Race, While Goux Captures Big-Car Division at 72.76 Miles Per Hour—Boillot Shows 101.53 Miles Per Hour in Flying Kilometer Trial at Boulogne—Ford Wins Dunlop Trophy in Canada



BOILLOT IN PEUGEOT IN BOULOGNE HILL-CLIMB

PARIS, Sept. 9—Special cablegram—The Peugeot again has demonstrated that its grand prix victory was no fluke by winning both divisions of the road racing carnival at Le Mans today, conducted by the Automobile Club of the Sarthe. In the 183-inch class Zuccarelli, driving a Lion Peugeot, was an easy winner, covering the 402.4 miles in 6 hours 12 minutes 25 seconds, an average of 64.8 miles per hour.

In the Sarthe cup event for heavy cars the grand prix Peugeot, driven by Goux, won over the same distance, which was covered in 5 hours 31 minutes 54 seconds, an average of 72.76 miles per hour.

There were fourteen starters in the small-car race won by Zuccarelli. Thomas, his team mate, set the pace, but was unable to maintain it long. Duray, in an Alcyon, then took up the running, only to be slowed by lubrication trouble. At half distance Zuccarelli went ahead, hard pushed by Barriaux, Duray and Champoiseau in a Schneider. The finish was:

Lion Peugeot, Zuccarelli.....	6:12:25
Schneider, Champoiseau.....	6:30:36
Vinot, Molon, Jr.....	7:16:13
Schneider, Nicodemi.....	7:17:36
Schneider, Croquet.....	7:33:00
Cote, Devore.....	7:41:35
Hispano-Suiza, Riviere.....	7:50:00
Alcyon, Duray.....	No time

Goux's victory in the big car race was an easy one, the only other finisher being Leduc in an S. P. A. Goux's time was 5:31:54 and Leduc's 6:55:15.

Nicodemi was held up in the traffic going to the course and started 15 minutes late. Still he landed in fourth place. Guyot was stopped at the starting line by

clutch trouble. Later, after taking on gas, his car caught fire and burned. Barriaux's Alcyon was put out of the race by a broken steering gear.

BOILLOT WINS AT BOULOGNE

Paris, Aug. 30—Seven kilometers over give and take roads at an average of 101.53 miles an hour; 3 kilometers with a standing start at 86.9 miles an hour; the flying kilometer at 77.66 miles an hour; the standing kilometer at 64.6 miles an hour; the mile standing hill-climb at 58.44 miles an hour; and 300 meters standing start on a 14 per cent gradient at 44 miles an hour—such was the star performance of Georges Boillot in the 4.3 by 7.8 Peugeot with which he won the grand prix race.

The records were put up in connection with the annual 4-day meeting at Boulogne-sur-Mer, when Boillot was the fastest in all the events in which he competed. Undoubtedly the best performance was the 7-kilometer race at the average of 101.53 miles an hour. This was run over a moderately surfaced road comprising a kilometer length with a gradient of 8 per cent. The previous record over this distance was held by the 200-horsepower Darracq, having a cylinder area double that of the Peugeot, and averaging 85 miles an hour. In this run Boillot easily defeated his fastest kilometer on a perfectly straight and level road in the grand prix at Pieppe. On that occasion his time was 99.86 miles an hour. Bruce-Brown's speed over the same measured kilometer was 101.67 miles an hour.

It should be noted that under the Boulogne rules the cars had to take part in all the races, from the 14 per cent hill-climb to the flying kilometer, without a change of gear ratio. So far as Boillot was concerned there was no attempt to increase speed by the adoption of streamline body, the only change from his Dieppe racing equipment being the absence of mud guards. The car was fitted with Rudge-Whitworth wire wheels shod with Continental tires.

In the 3-kilometer event, standing start, the grand prix Peugeot was alone in its class. The second best time was made by a Crespelle having a single-cylinder de Dion-Bouton motor of 4 by 7.8 inches bore and stroke, which was timed in 1.15%, being at the rate of 60.2 miles an hour. Riviere in a four-cylinder Hispano-Suiza of 2.5 by 7.8 inches bore and stroke, put up 2:06%; Ramet's Gregoire occupied 2:10%; and the one-cylinder Cohendet 3:16%. In the touring car class Joerns' Opel was the fastest with 1:38%, being at the rate of 67.8 miles an hour. Deryn, in a 3.1 by 7-inch Hispano-Suiza, was clocked in 1:57%, the other winners in their respective classes being: Leduc, S. P. A., 2:10%; Rigal, 3-liter Sunbeam, 2:25%; Jean Crouy, 3.1 by 5.1 Hispano-Suiza, 2:34%; Morel, Motobloc, 3:56%; Manfait, Delage, 4:19%; and Violet, single-cylinder Violette, 4:08.

For the 7 kilometers flying start the nearest approach to Boillot's record performance of 101.53 miles an hour, was a run by Guyot in 4:17%, being equal to 60.7 miles an hour. The car was a 3-liter model weighing, fully equipped, 1,700 pounds, which had been built by Guyot and Picker to the order of a leading French factory, but which was not completed in time to take part in the grand prix; this was its first appearance in public. Ramel, in a Gregoire, put up 4:55%, and Antony, on Cohendet, 7:13. Among the tourists, Joerns was again the fastest, with 3:24% for the 7 kilometers, this equalling 76.5 miles an hour. He was followed by Deryn in the two-seater standard Hispano-Suiza in 4:08%, the other class winners being Leduc, S. P. A., 4:40%; Rigal, Sunbeam, 5:18; Jean Crouy, Hispano-Suiza, 6:19%; Lavie, S. P. A., 6:22%; Morel, Motobloc, 9:38%; Manfait, Delage, 9:23%; Violet, Violette, 10:09%.

The mile hill-climb at Bainethum, with an average gradient of 10 per cent, was romped up by Boillot, from a standing start, at 58.44 miles an hour; Guyot came second in the racing section with an av-

erage of 36.3 miles an hour, his time being faster than that of the cars in the higher class. Crespelle's one-lunger went up in 1:39% and Ramel's Gregoire in 2:15%.

As the result of the various races, Derny, Hispano-Suiza, won the Franchomme cup with 257 points, being followed by Joerns, Opel, with 177 points; the same driver also won the Caraman-Chimay cup, with Joerns as his second; Joerns won the Imperial Pavillion cup outright; and Rigal, Sunbeam, won the Crespel cup with 73 points, followed by Jean Crouy, Hispano-Suiza, with 59 points, and Jouglet, Hispano-Suiza, with 41 points.

The meeting closed with a 500-meters race having standing start and finish, when Joerns and Rigal showed the greatest amount of skill. The time at the finish was not taken until the car was standing on the line. In most cases it was necessary to use the reverse gear in order to come to a stop on the line, but a few adopted the plan of applying all brakes and swinging round facing the direction of the starting line.

The results of the elegance competition gave first place to a closed Panhard with a Driguet body, and second to a Rolls-Royce with Hooper body. The most elegant open car was considered to be a Renault with body by Letourneur & Marchand, of Paris. Rigal's Sunbeam was the most elegant of the cars having taken part in the races.

FORD WINS DUNLOP TROPHY

Winnipeg, Sept. 3—The ninth annual race meet of the Winnipeg Automobile Club was the most successful speed tourney ever carried out in western Canada. Barney Oldfield and the other two members of his team, Heinemann and Fritsch, proved a great attraction in addition to the usual club events on the big program which totalled eleven events in all.

The track record for 1 mile, previously held by W. C. Power and the Buick, was reduced by Oldfield in the Christie to :54. Oldfield also set a new track record of 1:50 for the 2 miles.

The chief event of the day for local drivers was the 25-mile race for the Dunlop trophy, and was again won by Billy Rogers in a Ford car in 25:32.

The big crowd of 10,000 people, the largest ever in attendance at a race meet in Canada, evinced the greatest enthusiasm over all events, and Rogers came in for a wonderful reception at the end of the Dunlop trophy race.

Rogers also won the mile against time in 60 seconds flat, for the Gas Power Age trophy, the Goodrich trophy, and the club purse of \$100. The meeting was under the auspices of the Winnipeg Automobile Club, and was managed by A. C. Emmett.

CONTEST FOR ST. LOUIS OWNERS

St. Louis, Mo., Sept. 9—The fifth annual owner's reliability tour of the Automobile Club of St. Louis will take place on Saturday, October 5, with more than forty cars

competing. The route selected is through one of the most picturesque parts of the state and at one time touched the foothills of the Ozark mountains. A part of it is over the St. Louis-Arcadia highway. From St. Louis the cars will go through Maxville, Antonia, Victoria and Hillsboro to De Soto over the Lemay Ferry Road. Leaving De Soto they will return to St. Louis over the Ware and Gravois Roads through Morse's Mill, Valley Park and Manchester. What is going to give the 1912 tour an added zest is the number of women drivers that will compete. Last year there was one woman driver in the tour. This year there will be no fewer than five. The tour is open to any amateur driver in the city.

COTTON OUTLOOK IN TEXAS

Austin, Tex., Sept. 9—It is now possible to make what may be considered a conservative and reliable estimate of the probable total cotton production of Texas for the present season. According to the views of men who have made a careful personal investigation of the condition of the crop in every part of the state and who have had many years experience in forming conclusions as to the yield, the total production this year will be in excess of last year's record by not fewer than 200,000 bales, and if the splendid prospects that now obtain in north Texas continue until the close of the fruiting period the excess of the state's yield this year over last may reach 500,000 bales, or a total production of approximately 4,900,000 bales.

Already enough cotton has been marketed in Texas to have a very noticeable effect upon other lines of industry. This is due to the fact that the farmers are rapidly putting their money in circulation. In many instances they are making investments in manufacturing and other industrial enterprises in their home towns. This is shown by the increased number of

companies that are being organized for this purpose all over the state.

Car dealers also report that in the section where the cotton crop is being marketed in large quantities their trade is already showing a big increase. The time has arrived when the average Texas farmer looks upon the ownership of a motor car as being a necessity rather than a luxury. As a result of the practical uses to which this modern vehicle is placed dealers in motor cars find the farmers their best patrons. One of the features of the trade that is just opening up on a large scale is that the farmers are buying a higher standard of cars than in former years.

All lines of trade are expected to be exceedingly prosperous in Texas this fall and a spirit of optimism prevails in every section. In towns and cities building operations have been going on all summer with unprecedented activity and plans for other improvements during the next few months have been prepared on an elaborate scale. The most serious problem met with not only on the farms but in the cities is the shortage of labor. There is little prospect of this situation improving in the near future.

DISBROW AT FOND DU LAC

Fond du Lac, Wis., Sept. 10—Louis Disbrow and his aggregation gave an exhibition here yesterday, the occasion being the first day of the annual county fair. Disbrow, Joe Nikrent and Bill Endicott, who comprise the Disbrow Racing Association, hit the 1/2-mile circular dirt track in good fashion, considering the condition of the circuit. The events were:

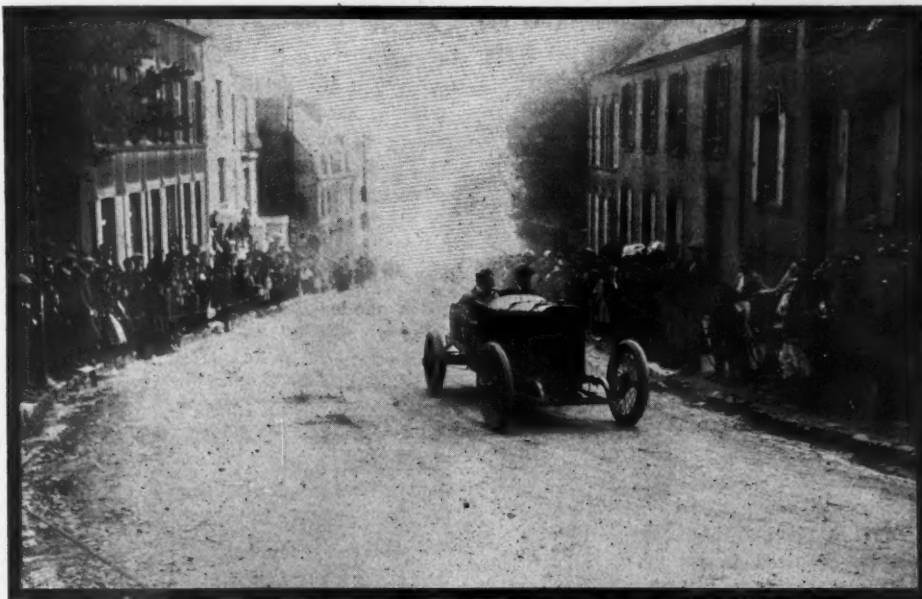
Mile against time—Disbrow in Jay-Eye-See, 1:01:50.

Three miles against time—Disbrow in Simplex Zip, 3:15:00.

Three miles—Disbrow in Case White Streak defeated Joe Nikrent in Case Bullet in 3:19.

Australian pursuit race—Disbrow in Simplex Zip defeated Nikrent in Case Bullet and Endicott in Case White Streak.

One-mile handicap—Bill Endicott in Case Eagle defeated Disbrow in Case White Streak and Nikrent in Case Bullet.



RIVIERE IN HISPANO-SUIZA IN BOULOGNE TRIALS

New York Electric Dealers Get Together

Association Is Formed for Purpose of Stimulating Trade in This Branch of the Industry—Proposition Made to Establish Motor Mart for Representatives in Manhattan

NEW YORK, Sept. 9—New York dealers in electric vehicles have reached the conclusion that the time for active local extension of the business is at hand. With this idea in view they have just completed the organization of the New York Electric Vehicle Association, which was established last Thursday. The purpose of the association is to foster and stimulate the electric vehicle trade in New York and vicinity. It will provide the usual protection for its members, and afford the opportunity for conference and co-operation of the interests represented in its roster for the purpose of improving the trade conditions in the metropolis. It is the definite intention of the new organization to secure a building which will house many, if not all of the local representatives. Announcement has been made that such a building has been found, the owners of which have agreed to lease on a basis of 5 per cent rental.

This building is several stories high, centrally located, and, according to the intentions of the association, will be divided into departments, such as a co-operative garage, show room, salesroom, and individual offices. While nothing in this line has been definitely settled, it is understood that options on this property have been taken by the association, and, unless better facilities are offered, the proposed deal will be consummated.

Indications have never been so favorable for the realization of the long-cherished dream of a motor mart. A much larger volume of trade is expected for the coming year, in view of the fact that the electric vehicle business has increased 45 per cent up to July 1, 1911, from the corresponding period of the year previous.

There are at present 1,800 electric vehicles in service in New York city, of which number but 400 are pleasure cars, the balance of 1,400 being commercial machines. This is surprising to most people, but the fact is that New York has never been considered a promising field for the sale of electric pleasure cars, there being but ten out of a score makers represented in the metropolis, while of the makers of electric commercial wagons, thirteen are represented out of a possible eighteen makers of this type of car. It is expected that the effect of the new organization will be to systematize the sales of both types and that it will prove a trade stimulus.

It is expected that considerable time will be required to round up all of the dealers in the Motor Mart, on account of present leases and the inevitable opposition of some members.

The following officers were named at the first meeting, whose duties will be to launch the new association upon its career: Arthur Williams, president, and William P. Kennedy, vice-president; the selection of the secretary and treasurer being deferred until some later time, when it is expected that a paid official will be selected for these joint duties, by the president or an executive committee. The executive committee consists of Nathaniel Platt, C. Y. Kenworthy, S. W. Menefee, and V. A. Villar.

FRICION-DRIVE MAKERS IN COURT

Detroit, Mich., Sept. 9—The Buckeye Mfg. Co., Anderson, Ind., maker of the Lambert car, have instituted suit here in the United States district court against the Cartercar Co., of Pontiac, Mich., alleging infringement of its patent relating to the use of aluminum face plates in the friction drive. A counter suit has been filed by the Cartercar Co. through its attorney, R. A. Parker of the firm of Parker & Burton, patent attorneys of this city. The Cartercar suit claims that the Buckeye company is making use of the former's method of friction wheel engagement and operation, which also is patented.

It is doubtful if the cases will come up before the present term of the district court owing to the large number of cases on the docket. They will probably be heard during the next term of the court which commences November 1.

LONAS IN KNIGHT COMPANY

Chicago, Sept. 9—Announcement is made that F. E. Lonas, attorney for Knight & Kilbourne for years associated with the inventor of the Knight motor, has invested largely in the company which has been formed to build Knight-motored cars at Turin, Italy. Associated with him is H. S. Levassor, of the firm of Panhard-Levassor, of France. The car will be called the Italo-Knight and the designer is W. O. Thomas, consulting engineer of the Knight interests. Two four-cylinder chassis will be made one of 20 horsepower with a bore of 90 millimeters and a stroke of 138. The other will be 25 horsepower, 100 by 150 millimeters. Other features of the new Italo-Knight, it is announced, will be a block motor, worm-driven rear axle, wire wheels, chain-driven gearbox, electric lighting and electric self-starter.

WILL HEAR CASE LATER

Buffalo, N. Y., Sept. 9—The date for the return of the temporary injunction

issued several weeks ago by Judge John R. Hazel in United States district court here directing the International Automobile League of Buffalo to show cause in the action brought against it by the Ford Motor Car Co., of Detroit, has been extended to October 1 through agreement of the respective attorneys in the case. The order was to have been returned on last Thursday.

The Ford company wants a permanent injunction against the International Automobile League to restrain that concern from selling or advertising for sale Ford cars at less than the price fixed by the manufacturers of the Ford cars. The Ford Motor Co. in its complaint alleges that the International Automobile League advertised that any person paying \$10 would be admitted to membership and would have the privilege of purchasing Ford cars at less than market price. The Ford company declares many orders for Ford cars were taken and that an attempt was made to buy the cars from the makers but the sale was refused. It is claimed that the Buffalo league secretly bought the cars from some Ford dealers and sold them to members of their organization at a 10 per cent discount.

CHANGE IN FIAT SALES SYSTEM

New York, Sept. 7—Announcement is made of the incorporation of the Fiat Motor Sales Co. to succeed the Fiat Automobile Co. at Broadway and Fifty-seventh street, New York, in the distribution of Fiat cars. The officers of the new company are: President, E. R. Hollander of New York; vice-president, Henry M. Sage of Albany; treasurer, Charles L. A. Whitney of Albany; secretary, R. D. Willard of New York.

In the formation of the new company J. S. Josephs and Benjamin Eichberg, who have for years been connected with the sale of Fiat cars in New York, retire to devote their entire time to the development of the Fiat factory at Poughkeepsie. Their action is in line with the plans of the parent factory at Turin, Italy, to greatly increase the output of its American branch. The new company will control the New York, Albany, Boston, Providence and New England territory.

MERGER CONTEMPLATED

Louisville, Ky., Sept. 7—At a meeting of the stockholders of the American Corporation of New Albany, Ind., which recently took over the plant of the American Automobile Mfg. Co., a proposition to merge with the Advance Power Co., of Chicago, was considered this week. The board of directors was authorized to do what it thinks best. It is understood that the merger will be consummated within the next month and the capital stock will be increased from \$150,000 to \$1,000,000.

Huber Patent Threatens to Make Trouble

The new concern will be known as the Advance Motor Car Co. It is planned to move the Chicago concern to New Albany where a 1,000 pound truck, with a double friction drive to sell for a low price will be manufactured. A salesroom will be maintained at Chicago. It is understood that C. D. Harris, of Chicago, president of the Advance Power Co., will hold the same position in the new concern.

At the meeting J. W. Baxter, of New Albany, Ind., was elected director in the American Automobile Co. to succeed L. A. Boli, Jr., retired.

HUPP INCREASES CAPITAL STOCK

Detroit, Mich., Sept. 9—The capital stock of the Hupp Motor Car Co. has been increased from \$500,000 to \$750,000, according to the papers which have recently been filed with the secretary of state. This capital increase is made possible through the transferral of \$250,000 from the company's surplus to its capital account. This disposition of its surplus was voted at a recent meeting of the stockholders of the Hupp company, at which it was also voted to allow a 50 per cent stock dividend on account of the capital increase. The Hupp company reports prosperous conditions.

TO MAKE CANADIAN ARGYLL

Montreal, Can., Sept. 7—The Hackett Motor Car Co., Ltd., of Oshawa, Can., has secured the patent rights to manufacture the Argyll engine in Canada. The Argyll car hitherto has been made in Scotland, but Canadian capitalists have purchased the manufacturing rights for the dominion. This concern will be known as the Hackett Motor Co. Last spring it bought the plant of the Matthew Guy Automobile Works, Oshawa, and the equipment there will be enlarged to enable the company to turn out a very largely increased output. It is the intention of the Hackett company to build cars equipped with the Argyll valveless engine. It is announced there will be four and six-cylinder models. The company will also build a cheaper car with a different engine. The Hackett concern will take the form of a limited liability company. The capital is \$350,000.

DETROIT ELECTRIC MEN MEET

Detroit, Mich., Sept. 9—The Anderson Electric Car Co. entertained its agents last week. Representatives were present from all parts of the country where the Detroit electric is sold. Plans for the coming season's campaign were talked over, and contracts for the 1913 allotments were made.

DAY WITH GENERAL MOTORS

Detroit, Mich., Sept. 9—William L. Day, formerly sales manager of the Mitchell-Lewis Motor Co., Racine, Wis., has been made vice-president and general manager of the General Motors Truck Co., Pontiac, Mich.

Three-Point Suspension Claims Being Pushed by Inventor Who Declares He Will Test Their Validity in Courts —Packard, Havers and Cass Take Out Licenses

DETROIT, Mich., Sept. 7—The Emil Huber patent No. 788,407, dated April 25, 1905, which covers all forms of three-point suspension of the main frame of a motor car, bids fair to make trouble for some twenty concerns, according to R. A. Parker of the firm of Parker & Burton of this city, patent attorneys for the North American Vehicle Co., owner of the Huber patent.

Within the last 2 weeks the patent has assumed large proportions and it is the intention of the owners to test its validity to the limit. Already several concerns have taken out licenses, among which are the Packard Motor Car Co., the Havers Motor Car Co. and the Cass Motor Car Co. The North American Vehicle Co., through Mr. Parker, has sued the Detroit Taxicab and Transfer Co., which concern owns a number of Kelly machines. The Kelly Motor Truck Co. of Springfield, O., is conducting the case for the taxicab concern through its attorneys, Staley & Bowman of Springfield, O. It is merely a test case and suit has been brought against Detroit Taxicab and Transfer Co. simply because this concern is the most convenient to reach. The North American Vehicle Co. claims that the Detroit Taxicab Co. is operating trucks designed along the lines of the Huber patent and in violation of this patent. Should the former win the case it will affect the motor car industry to a considerable extent.

The case is now on the docket of the United States district court, but it is doubtful if it will come up for consideration during the present term.

Staley & Bowman, attorneys for the taxicab company, on September 3 filed an answer to the North American Vehicle Co., refuting the latter's claim. The substance of this answer is given below:

1—Defendant denies that Emil Huber, mentioned in said bill of complaint, was the true, original, first and sole inventor of any new and useful improvements relating to the motor vehicle as alleged, also denies that the alleged improvements were not known or used in the United States before Huber's alleged invention and not operated or described in any printed publication in the United States or any foreign country before Huber's alleged invention or more than 2 years prior to Huber's application for patent and that same had not been in public use or on sale in this country for more than 2 years prior to Huber's application for patent or that any application for a foreign patent for alleged invention was filed by Huber or his representative prior to the filing of the application in the United States or that said invention had not been abandoned.

2—Defendant admits that letters patent of the United States No. 788,407, dated April 25, 1905, was issued to Emil Huber, but denies that Huber made application to the commissioner of patents of the United States and renewed said application in accordance with the then-existing acts of congress or complied in all respects with the conditions and requirements of said acts or that letters patent were

signed, sealed and executed in due form of law or that there was secured to Emil Huber the sole and exclusive right of making and selling others the improvements alleged to be described and claimed in said letters patent.

3—Defendant is not advised except by bill of complaint as to whether or not Emil Huber conveyed one-third interest in said letters patent to Henry G. Ide or as to whether or not Emil Huber and Henry G. Ide sold, assigned and transferred unto the complainant the entire right and interest in and to said letters patent, together with all rights of recovery for past infringements arising under said letters patent and therefore denies the same and leaves the complainant to test proof.

4—Defendant further denies that the complainant became and now is the sole and exclusive owner of said letters patent and of the alleged invention and improvements described therein or of any rights and privileges intended to be secured thereby and denies complainant has invested and expended much, or any sums of money or has been to great or any trouble or expense in and about alleged invention or that said invention has been and is of great or any benefit or advantage or that complainant will realize and receive any gains and profits if the alleged infringement be prevented.

5—Defendant denies any knowledge of the patent or alleged assignment to the complainant or of any alleged rights of the complainant and denies that it or the public has been fully notified of any alleged rights of the complainant to the alleged invention.

6—Defendant denies that it has contrived to injure or deprive complainant of any alleged benefits and advantages that might accrue and denies that it ever made, constructed, used or vended to others to be used, motor vehicles embodying and containing alleged invention within the United States or that it is continuing to do so, or has made and realized large profits and advantages from any such alleged infringement or that it is threatening to make use and vend to others to be used, motor vehicles, and further denies that any such alleged infringement has been to the great and irreparable or any loss or injury to the complainant or that the complainant has been and still is being deprived of great gains and profits by such alleged infringements or that it has made any preparation to continue such alleged infringement or any other alleged unlawful acts in disregard and defiance of any rights of complainant or that any act of this defendant has encouraged or induced others to venture to infringe said letters patent.

7—Defendant also denies receiving notice from complainant of any such alleged infringement or has disregarded any such notice or has refused to desist from any alleged infringement.

8—Defendant also denies that the devices described in said letters patent contain any material beneficial advance in the art over and above what was previously well known by those skilled in the art as it existed at and prior to the date of the alleged invention purported to be described and claimed in said letters patent.

9—Further answering this defendant is informed and believes and therefore avers the fact to be that said letters patent No. 788,407 are invalid for the reason that said Emil Huber was not the original and first inventor of the invention alleged to be described and claimed in said letters patent or of any material and parts of the said alleged invention had been patented or described or illustrated in printed publications prior to the date of the alleged invention by Emil Huber or for more than 2 years prior to the date of his said application for patent.

10—Defendant further states on information and belief that in view of the said art with respect to the motor vehicles and analogous apparatus at the time of the alleged invention of the said Emil Huber and long before that time the matter shown and claimed in said letters patent were not patentable inventions but improvements or mere mechanical expedients requiring no invention and within the domain of mere judgment and skill in the art.

11—Defendant further states on information and belief that the alleged improvements described in letters patent were wholly inoperative and worthless for any useful purpose.

12—This defendant denies each and every allegation in said bill of complaint contained except heretofore admitted or specifically denied and avoided.

Canadians Are Interested in Car Display

Toronto Exhibition Attracts a Half-Million Dollars Worth of Pleasure and Commercial Motor Vehicles—Nebraska State Fair Benefits Nebraska Dealers



VIEW OF MOTOR CAR EXHIBITION HELD IN TORONTO

TORONTO, Ont., Sept. 7—What is claimed to be the greatest display of motor cars ever made in the dominion of Canada is the exhibition in the Transportation building here at the Canadian national exhibition where more than fifty car dealers are exhibiting at least a half million dollars' worth of pleasure and commercial motor cars, including trucks and motor fire wagons. The application for space far exceeded accommodations and it was necessary to press into service a tent, 100 by 50 feet, to the west of the Transportation building to care for the overflow exhibitors.

At the exhibition many new cars never before seen in Canada were on display, some of these being of Canadian design while others were of English, French and American make. Unusually active business was done at the exhibition in the matter of sales, hundreds of thousands of visitors to the Toronto fair having viewed the cars among whom were many buyers.

The mammoth exhibition indicates the great business that the Canadian factories and dealers have had during the past year over 15,000 licenses being granted to owners of cars alone in the province of Ontario. The greatest demand for motor cars came from the vicinity of Toronto as this city is the center of great population and the roads in this section for motorists are excellent. However the great surprise in the motor car line this past year was Hamilton, Ont., which factories have had great difficulty in keeping up with the constant demand for cars.

Nineteen factories are finding it a hard matter to keep up with the demand for cars. The factories are all located right here in the province of Ontario and are

as follows: Peck Electrical Co., Toronto; McLaughlin-Buick Motor Car Co., Oshawa; Tate Electric Co., Walkersville; Flanders Electric Co., Walkerville; E-M-F Co., Walkerville; Ford Motor Co., Walkerville; Hupp Motor Car Co., Walkerville; Canada Cycle and Motor Co., West Toronto; Reo Motor Car Co., St. Catharines; Petrolea Motor Car Co., Petrolea; Northern Motor Car Co., Kingston; New Dominion Motors Co., Brantford; Canadian Motors Co., Galt; Gramm Motor Truck Co., Walkerville; Brockville Atlas Auto Co., Brockville; Clinton Motor Car Co., Clinton; Woodstock Motor Car Co., Woodstock; Schacht Motor Car Co., Hamilton; and the Hackett Motor Car Co., Oshawa, Ont.

FAIR HELPS NEBRASKA DEALERS

Lincoln, Neb., Sept. 9—The state fair which closed here last week brought together the greatest collection of motor cars ever assembled in the state of Nebraska. The big day of the fair, there were nearly 2,000 cars, by actual count, parked in a place near the grounds, set apart for this purpose. They filled several acres.

It was an indication of the way that the farmers of Nebraska are buying cars. The biggest per cent of these cars were owned by farmers, or residents of small towns.

Wednesday was Omaha day, and this was the biggest day. Ninety cars, with their Ak-Sar-Ben banners went from Omaha to Lincoln on that day, and there were perhaps a still larger number of Lincoln cars, but the majority of the cars were owned by people living outside of the two large cities of the state.

One building was set apart for the display of cars, and about a dozen dealers

had exhibits of the 1913 models. Omaha dealers went to Lincoln to assist the Lincoln dealers in the display of the cars. As many of the dealers from over the state visited the fair, a large number of contracts were signed up.

PREPARING FOR MICHIGAN FAIR

Detroit, Mich., Sept. 9—The Michigan state fair, which is to be held here from September 16 to 21, has much in store for motor enthusiasts this year. On the main floor of the motor car building, there will be the forty-five exhibitors of motor cars. This array of the season's latest models will occupy the entire floor space, while the second floor is to be devoted entirely to famous cars and to early models. The oldest Packard, the world-touring Hupmobile, the Regal Plugger, the Maxwell Glidden tour winner of last year, and many other well-known cars will be on exhibit. Several famous racing cars will also be shown. Many of the trophies which have been contested for in the past will be placed on exhibit, and the whole is unique, representing as it does much of the history of the motor car industry.

DETROIT S. A. E. MEETS

Detroit, Sept. 6—The Detroit section of the Society of Automobile Engineers held its monthly meeting last night at which two papers were presented, one by Mr. Parkinson of the Esterline company, on Golden Glow lamps, the other by Mr. Millington, western representative of the E. D. Budd Mfg. Co., on pressed steel bodies, in addition to the ordinary routine business.

Mr. Parkinson stated that this new lamp, although of value would not create a new era in the lamp industry, nor would it put any lamp companies out of business. There has been a big demand for an artificial light that would contain an element of sunlight and that would appear almost as a natural light.

The Glow Worm lamp gives this much desired result by using a reflection of special design and composition. The material used is a plate glass, the formula of which is a secret possessed by the glass company which makes the reflectors. The composition is such that the reflected light has the same spectrum as sunlight.

The design of the reflection is in general a parabola. This may be varied to suit a number of conditions. The thickness of the reflection is practically the same all over. The surfaces are highly polished and the back is silvered. The peculiar property of light given out by a Golden Glow lamp is that of fog penetration. By actual experiment a Golden Glow light 16 candlepower can be seen 2,300 feet through a fog where a 2,000 candlepower are light was invisible at 200 to 300 feet only.

Burman Cuts Mile Mark in Jumbo Benz

When used on motor cars, the usual glare of the headlights is not found. Holes and bumps appear in the natural state and even colors can be very distinctly seen. Mr. Parkinson stated that the Detroit United Railways has ordered Golden Glow lamps for all new cars and all replacements. These lamps are not now on the market to the motor car trade but will be by fall. The paper was then open for discussion by members of the society.

The second paper of the evening was read by Mr. Millington, who asserted that the buying public is becoming very discriminating and demands style, comfort and luxurious equipment and at the same time popular prices. These conditions force the motor car builder to look around for a body that has the desired qualities and at cost to him that will be allowable. The old style of heavy wood frame construction and wooden panels is practically obsolete, the panels are hard to obtain and the time allowed for finishing is too short to permit of turning out a job that will stand up. The wooden frame construction with metal panels is now fairly popular and certainly has many good points, but a new body era is awakening. The era of the all steel rivetless and jointless motor car body. This type of body is made with a great degree of accuracy. All parts are die made and jig assembled. Panels are made in one piece and gas welded together. The whole is then spot welded to the pressed steel frame. All doors are die made jig assembled and are consequently absolutely interchangeable. They are even painted before being placed on the bodies.

The cost of an all steel body constructed along the above pattern is high unless made in very large quantities.

Dirt Track Record Reduced to 47.85 Seconds at Brighton Beach—Oldfield, Disbrow and Others Drive at Minneapolis Meet During Annual Fair Held at Hamline

NEW YORK, Sept. 9—Clipping a shade more than $\frac{3}{4}$ second from the mile circular dirt track record, the Jumbo Benz, rated at 300 horsepower and driven by Bob Burman at Brighton Beach Saturday, made a new mark for the speed brigade to shoot at. The new record was made in a special event staged for the purpose of showing the car under ideal speed conditions. The start was impressive, following an easy circuit of the track to the head of the stretch, where Burman turned loose his motor and whisked over the line at spectacular speed. He swerved to the rail at the stand and then cut across the track to the club-house turn, shaving the inner circle and going far out on the track at the back stretch. The straightaway is rather long and the Benz covered it at the rate of nearly 100 miles an hour, cutting in close at the stable-turn and turning into the stretch with a roar came down to the line at brilliant speed.

The timers announced the new record as 47.85 seconds. The former mark was 48.62 seconds, which was made by the Blitzen Benz with Burman driving, last year. The speed attained was at the rate of a little less than 75.24 miles an hour. The summary of the other events follows:

Five miles, under 300 inches, non-stock—Ainsley, Mercer, won; Burke, E-M-F, second. Time, 5:13.

Five miles, under 600 inches, non-stock—Burman, Cutting, won; Lewis, Stutz, second. Time, 4:45.

Three miles, free-for-all, Remy brazard, first heat—Burman, Benz, won; Kyle, White, second; Hickman, Mercedes, third. Time, 2:46.

Second heat—Kyle, White, won. Time, 2:57. Other two cars collided.

Forty miles, under 600 inches, non-stock—Burman, Ohio, won; Lewis, Stutz, second. Time, 42:09.

Five miles, handicap—Lewis, Stutz, won. Time, 5:04.

This mile record is a historic mark and one for which several noted drivers have fought. Barney Oldfield held it for several years; then Ralph de Palma cut in and on a couple of occasions he was credited with the work. For the past year Burman has had the field to himself. The car he drove Saturday was a new Benz, which he has just secured.

HAMLIN TRACK MEET RESULTS

Minneapolis, Minn., Sept. 9—Huge crowds saw the annual Minnesota state fair races Saturday afternoon, on the Hamline track midway between the Twin Cities. The races were under direction of Dr. C. E. Dutton, state representative of the A. A. A., and were electrically timed by a Warner instrument. Rain late in the day shortened the program and prevented running off a dead heat in the first event between Oldfield in a Cino car and Ulbrecht in a White Streak. Wonderlich was barred owing to notice of disqualification by taking part in an unsanctioned meet. G. L. Moore drove the Marquette-Buick instead. Summary:

Five miles, class E non-stock, for cars of 300 cubic inches displacement and under—Barney Oldfield, Cino, and Ulbrecht, White Streak, dead heat for first; Disbrow, Case Bullet, third; Leo Broker, Mercer, fourth. Time, 5:05.

Five miles, class C non-stock, division 4C, cars of 301 to 450 cubic inches displacement—Barney Oldfield, Prince Henry Benz, won; Bill Endicott, Case, second; Al Wilson, Jackson, third; G. L. Moore, Marquette-Buick, fourth. Time, 5:17.

Ten miles, class E, open to cars of 600 cubic inches displacement and under, best two out of three heats—First heat, Disbrow, Simplex Zip, won; Lou Heinemann, Cino, second; Nikrent, Case Bullet, third. Time, 10:03.

Second heat—Disbrow, Simplex, won; Nikrent, Case, second; Heinemann, Cino, third. Time, 10:15.

One mile, for world's circular dirt track record, flying start—Oldfield, Christie, won; time, :51 $\frac{1}{2}$; Disbrow, Simplex Zip, second, time, :52 $\frac{1}{2}$; Disbrow, Jay-Eye-See, third, time, :54 $\frac{1}{2}$.

Australian pursuit race—Barney Oldfield, Cino, won in 13 miles; Nikrent, Case Bullet, second. Time, 13:07.

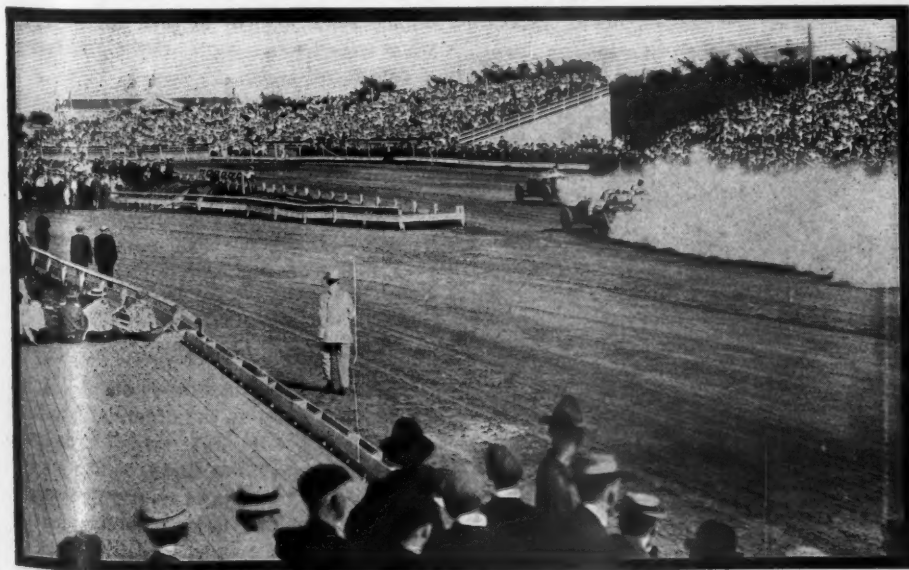
Special event—Barney Oldfield, Christie, against world's circular dirt track record, flying start. Time, :53.

Special event—Disbrow driving Simplex Zip against world's 3, 4 and 5-mile circular dirt track records, flying start. Time, mile, :52; 2 miles, 1:45 $\frac{1}{2}$; 3 miles, 2:37; 4 miles, 3:28 $\frac{1}{2}$; 5 miles, 4:20 $\frac{1}{2}$. Established new record for track. Old record was 4:22 $\frac{1}{2}$.

Five miles, class D, free-for-all handicap—Disbrow, Simplex, won. Time, 4:47 $\frac{1}{2}$; Nikrent, Case, second, 4:48 $\frac{1}{2}$; Broker, Mercer, third, 4:53.

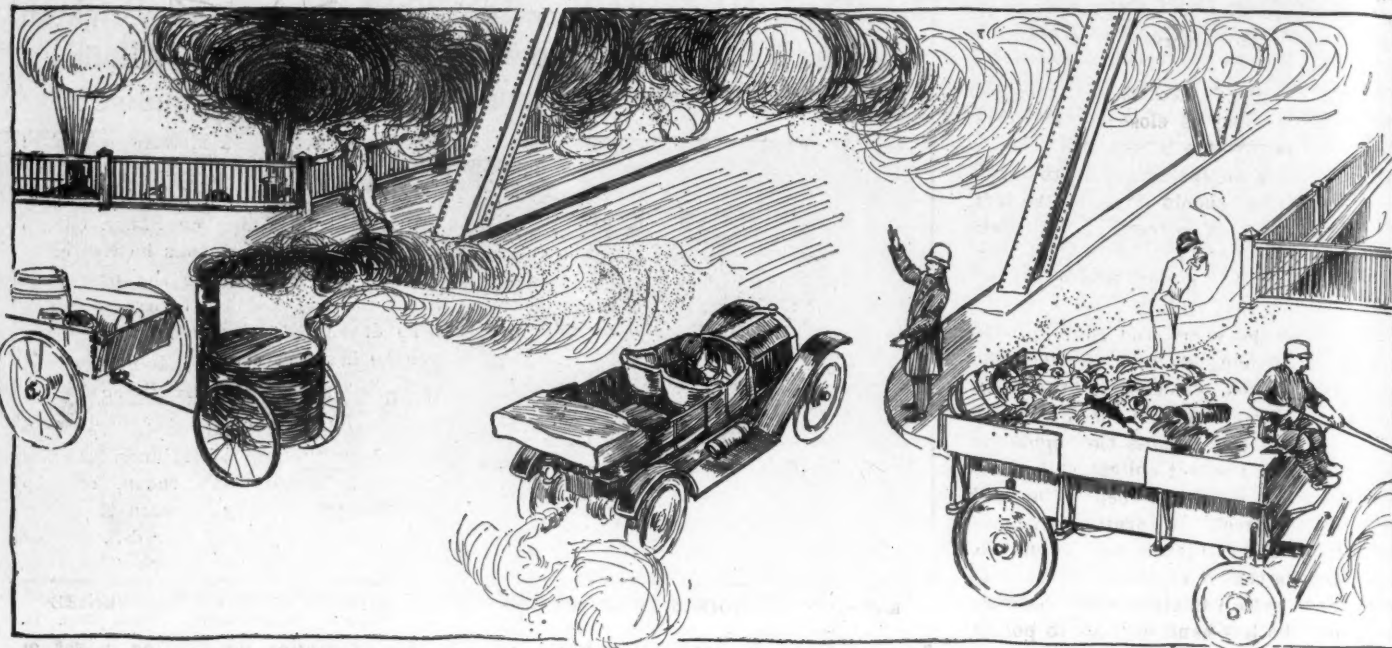
INDIANA FAIR SHOW A SUCCESS

Indianapolis, Ind., Sept. 9—The motor car show held in connection with the Indiana state fair in Indianapolis, September 2 to 6, proved quite successful, a satisfactory number of sales being reported. About 140,000 people visited the fair during the week. Companies exhibiting were: Marmon, Premier, National, Cole, International Harvester, Great Western, Hupmobile, Studebaker, Regal, Marion and American.



START OF FREE-FOR-ALL AT MINNEAPOLIS MEET

Modern Traffic Code Used in Washington



EVERY CITY MUST TODAY MAKE PROVISION AGAINST EXCESSIVE EMISSION OF SMOKE AND GASES FROM MOTOR VEHICLES IF NOT FROM DIFFERENT SOURCES

WASHINGTON, D. C., Sept. 7.—In line with the commendable activity in behalf of uniform traffic regulations, Washington has much to offer for the emulation of other cities. On account of the unusual width of streets in the capital, the problem of properly handling this traffic with a necessarily limited police force is grave, and the effectiveness of the methods employed prove their value.

Among the features most noteworthy is the way in which the district regulates pedestrians, notably in the conduct of processions on the public streets. That this should have been brought to a high state of perfection in the city that has, without doubt, more functions of this character than any other, is not to be wondered at, and other cities which have been brought to the realization of the difficulties involved may well profit by the experience of Washington.

Great Advances Made

Following the lead of Captain Alexander R. Piper, U. S. A., retired, former police commissioner in charge of street traffic in New York city, to whom credit is due for the introduction of the block system of traffic regulation, great advances have been made in the conduct of traffic on the streets of American cities. In behalf of uniform regulations affecting the general conduct of traffic in all cities, too much cannot be said, but as Major Richard Sylvester, who is mainly responsible for the traffic system in Washington, points out, the arrangement of regulations for traffic in cities is an undertaking calling for knowledge and consideration of existing and continually arising conditions, and in one community there are conditions that

Many Noteworthy Features in District of Columbia's Rules

do not belong to another, so that so far as setting forth suggestions for universal application to all phases of its problems, the many diversities and dissimilarities in the conditions to be coped with in different localities precludes in advance any practical draughting of universal regulations in all localities.

Problems in Other Cities

To what extent uniformity should be observed, according to Major Sylvester, may best be determined by reciprocal study of the problems of other cities by the authorities in charge of the traffic of any one. That certain regulations

should be rigidly adhered to by all cities is strongly insisted by the major. To quote from an address delivered before the first American Road Congress, under direction of the Touring Club of America, which was held in Richmond, Va., last fall, to which Major Sylvester was a delegate, representing Washington, as its chief of police:

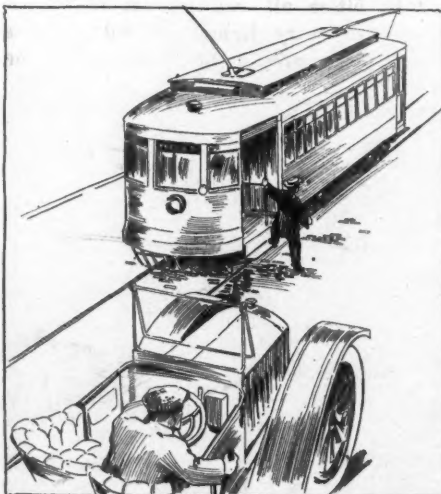
"The degree of perfection in the construction of avenues, streets, roads and highways, as well as the degree of excellence in the providing of governing rules, usually corresponds to the degree of intelligence and wealth of the locality where in the same exist and are controlled.

"The pedestrian is a prominent factor—in these regulations—whose rights must be protected. While the well established rule of the road, always to turn to the right, when one vehicle passes another, maintains generally, it is not so true in practice on the part of the pedestrian, though it should equally apply. It has been held by leading authorities that for the purpose of effecting a complete system of traffic, equestrians, led horses, and everything on wheels or runners, except street cars and baby carriages, should be regarded as vehicles, and the word horses should include all domestic animals.

Motormen Should Heed Law

"Street railway motormen should be required to conform to the orders of the constituted authorities at street crossings, dangerous corners and turns, at fire engine crossings and to all laws relating to speed, and taking on and letting off passengers.

"It should be required that drivers of all vehicles not only comply with the regulations, but that they should be urged



MOTOR CARS SHOULD STOP 10 FEET BEHIND A STREET CAR TAKING ON OR LETTING OFF PASSENGERS

to co-operate with the police in instructing others in order to prevent congestion and accidents and to decrease financial loss through non-observance of the requirements.

"That heavily loaded, slow-moving vehicles should keep as close to the right-hand curb as possible is important, and a vehicle passing another going in the same direction, always should do so to the left.

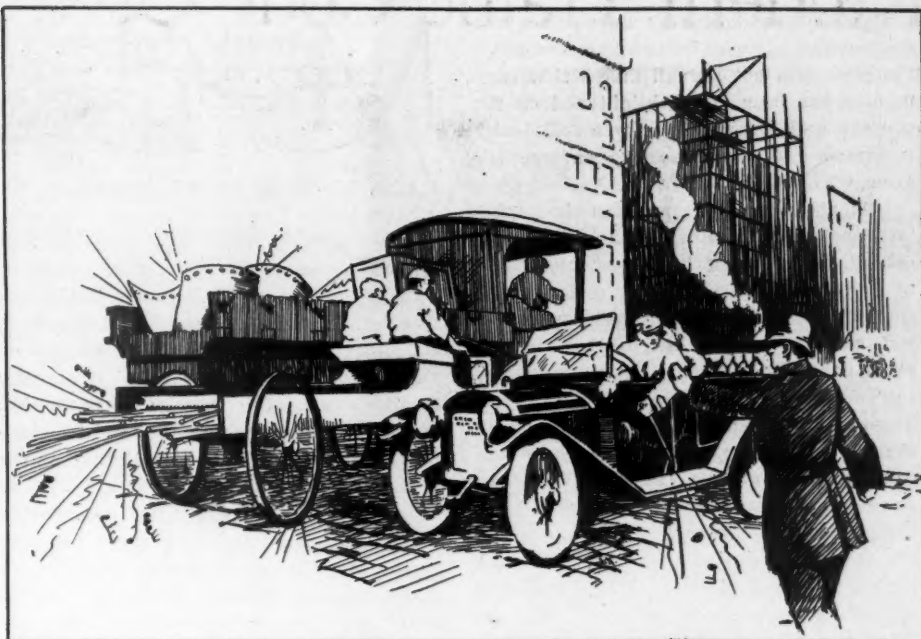
"The turning of corners to the right along the immediate line of curb has one drawback, at least, in this, that if a regulation prevails that all heavy vehicles shall keep as near the right-hand curb as practicable, in so doing it would immediately place the lighter vehicles in the same category as the heavy, and for this reason in the District of Columbia the regulation on this subject makes it obligatory in turning corners to the right to keep to the right center of the street. In turning corners to the left, into an intersecting street, the rule demands that a vehicle shall move so as to leave sufficient clear space between itself and the left-hand curb as to permit the safe passage of another vehicle.

Segregation of Trucks

"Avenues and streets given up to the retail trade, including the shopping districts, particularly, should be clear of large trucks hauling merchandise; wagons transporting hay, garbage and ashes, and other unsightly loads of refuse. These should be assigned to nearby thoroughfares more suitably adapted to commercial purposes.

"Every city having in view a favorable reputation in traffic regulation, must today make provision against excessive emission of smoke and gases from motor vehicles, if not from different sources, that would be offensive to pedestrians and others patronizing its public ways; and should be just as diligent in suppressing uncalled for noises from running engines after motor conveyances have stopped and other unnecessary mechanical noises when moving, as well as the rattling of milk cans at early hours of the morning by indifferent drivers of horse-drawn vehicles. Vehicles moving north and south should be accorded the right of way.

"There have been involved in the traf-



MECHANICAL NOISES IN MOTOR CARS WHEN MOVING MUST BE SUPPRESSED

fic regulations in large cities, beginning with New York, rules requiring that a driver shall signal when slowing up, stopping, turning or backing, by raising the whip or hand, or otherwise indicating the direction that is to be taken. While not generally enforced, the rules deserve an emphatic favorable endorsement.

"One of the most far reaching regulations is that of the District of Columbia prescribing a penalty for colliding. While in Paris, the individual, under the law, must avoid being struck, in many cities of this country, vehicles are required to stop when the cars do in order to avoid colliding with passengers alighting therefrom. The District ordinance provides against driving a vehicle carelessly or willfully so as to collide with another vehicle of any kind, or any person, and affords opportunity, when violated, for criminal and civil action.

Against Headlight Glare

"In cities all vehicles should be required to carry lights and all business conveyances should be numbered. The need for such regulation is at once obvious. Criticism also can justly be made

in this connection against too bright or dazzling headlights on motor vehicles in congested districts, as well as the frequent failure to throw sufficient light upon the license numbers of motor cars, anywhere and everywhere. Equally necessary are the sound signals on motor conveyances, and they should be of a kind as near in accord as possible, and their use avoided for announcing that the machine is in waiting, or similar purposes.

Would Prohibit Street Repairs

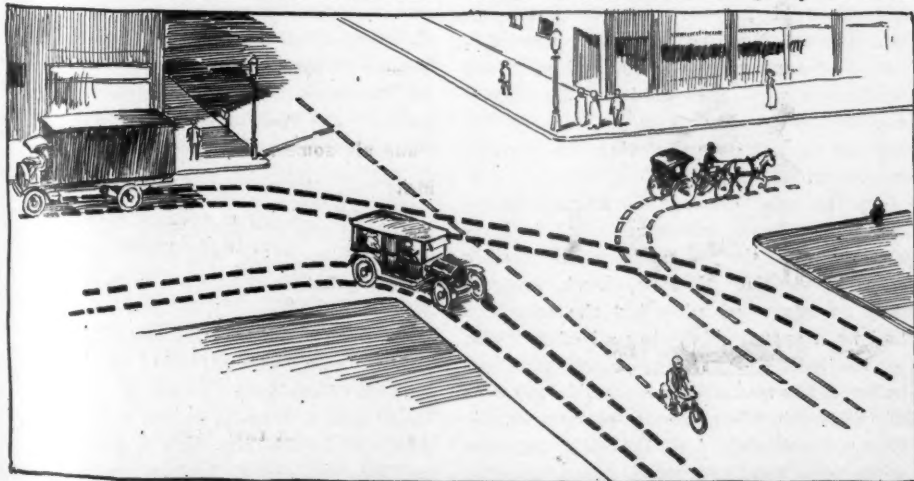
In a more radical vein, the major advocates the prohibiting of repairs in the public streets, the restraint of intoxicated drivers from driving in the public streets, requirements that a clear view to either right or left be provided in all covered vehicles, and the prohibiting sleds from the use of the public streets.

Recognizing the futility of antagonistic and factional action in regard to these matters, Major Sylvester says:

"Uniformity in movement by all classes of conveyances is what makes for traffic system. So long as one speed allowance is made for street cars, another for motor vehicles, and still another for horse-drawn vehicles, just so long will there be lack of system.

Should Recognize Horse's Demise

"It goes without saying that the authority charged with making the laws and regulations for the control of vehicular traffic should not lose sight of the fact that there is a gradual elimination of horse-drawn traffic in progress and a rapid increase of motor propelled vehicles, and this being accepted, conditions will so have changed in a period of time as to warrant modifications in restrictions and other respects. The withdrawal of the horse, gradual education of drivers and pedestrians, improvements in machines, skill in handling and demands for expedition in transit will necessitate it. Right here, it may be stated, however,



SEPARATE TURNING RULES FOR HEAVY AND LIGHT VEHICLES ARE PROVIDED

that no matter how near model the laws and regulations may be in a given locality, the same will not prevail unless that community has been fully enlightened on the subject, and has a police force sufficiently informed and courageous to enforce the same without fear or favor.

"Along these lines education should follow, and first, in order to reach those concerned, proper sign boards should direct as to the speed limit; where and when to slow down, keep to the right, or to the left as near as possible to the curb, in plain bold letters, along roadways and in sections where the display of warnings is important. In addition to this, there should be distributed to pedestrians and drivers in every city, as well as to all owners and operators of vehicles, through the police, with a surplus at station houses for those who might desire them, printed copies, in pamphlet form, of such laws and regulations as might be adopted. This independent of any similar action by motor clubs or others. In the matters of turns, and in crossing from one side of the street to the other, it is in keeping with good policy to illustrate the same in all printed instructions, with diagrams, showing the legal mode of procedure."

Washington Has Efficient Police

The method employed in Washington of enforcing these regulations is very well worth the consideration of all civic traffic officials. A corps of sixty policemen is detailed on bicycles to enforce the speed law, which corps is supplemented by a squad of six on motorcycles. The officers are instructed to be respectful and courteous, and to observe all vehicles, regardless of motive power with equally close attention, and to exercise discretion in making due allowance for slight unintentional violations, such as the unnoticed extinguishing of a tail light, whose previous burning might be indicated by its warmth, proving the lack of purposeful intent or negligence on the part of the driver.

As was mentioned above, the district has what is believed to be a unique regulation regarding the conduct of processions on its streets. At the suggestion of the police department, the city of Washington some years ago adopted a permanent roping device for guarding against the encroachment of pedestrians upon the parade space. This consists of permanent sockets in the curb, at intervals of 50 feet, into which uprights are fitted, and cables run through eyelets in them, when in use. These temporary barriers extend from street intersection to street intersection, manila ropes being stretched across street crossings. This simple contrivance saves many hundreds of policemen, and is more effective, in that the steel cable cannot talk back, or abuse its authority.

In substance the policy of the capital city is to regulate its traffic as nearly as possible according to accepted standards, at the same time making due allowance for local conditions.

Manufacturers' Communications

CARBURETER TROUBLE DENIED

CHICAGO—Editor Motor Age—We wish to refer to Motor Age, issue of September 5, page 6. It is stated that de Palma, the winner of both the Elgin and free-for-all races, stopped on account of carbureter trouble. This is error, as de Palma had absolutely no carbureter trouble during the races, and never has had any trouble with the Rayfield since first installing it on his Mercedes car at Savannah last November. When de Palma stopped at the pits, his carbureter was flooding, but this was due to the fact that a valve had been shut off in his air line between the pump and the gauge, and the mechanic had pumped the pressure up to 8 pounds. In ordinary practice drivers never use more than 2 pounds pressure on gasoline, but the Rayfield carbureter will stand 7 pounds.—Findeisen & Kropf Mfg. Co.

Chicago—Editor Motor Age—Motor Age reported me as having carbureter trouble in the Elgin road races. Permit me to say I did not experience carbureter trouble of any kind at Elgin. I had no carbureter trouble at Indianapolis or Santa Monica and I have had none since first using the Rayfield last fall in the Vanderbilt and grand prix.—Ralph de Palma.

OVERLOADING TRUCK TIRES

Scranton, Pa.—Editor Motor Age—The question of overloading tires on motor trucks is one of the great points that the dealer as well as the tire man must look after. Sometime ago we received complaint from a large wholesale grocery company in Cincinnati, where we have some of our 6-ton trucks in service, that one of the rear axles was sprung. We knew that this could occur only through abnormal service. We therefore sent a representative to Cincinnati, not to go to the wholesale company, but instead to watch some of the loads coming from its place of business. When our representative thought he saw one overloaded, he boarded it. He persuaded the operator to drive on some public scale, and he found that there was on this 6-ton truck a paying load of 18,600 pounds, or 9¼ tons. It will be seen at once that this is a destructive overload.

In the case of the overloading above mentioned, three parties must suffer. First and greatest, the tire makers, and doubly so from the fact that the truck was not only grossly overloaded, but the rear axle had been sprung, throwing all of the load on the inside tires. The second party to suffer is the manufacturer, for, in the eyes of the public, the abuse as noted above is never considered, but the fact remains with them that the truck caused trouble in service; the manufacturer's reputation

is therefore in jeopardy. The third party to suffer is the owner of the truck. While perhaps not suffering any immediate large outlay for upkeep, the continual overloading is bound to count against him.

To my mind we must look to the co-operation of the tire maker to prevent overloading, and, if taken in hand vigorously, a custom or usage can be established which will militate against overloading. The manufacturer's part in this program should be to provide the chassis with a capacity plate showing the capacity that the chassis should carry, including the body, and if the manufacturer makes the body also, he should provide a plate to be fitted to the body showing the capacity allowed in the body. He should caution the customer about the serious results of abnormal overloading, and should discourage overloading at all times. The part on the program that the tire maker should play can be even more effectual than that of the manufacturer. The tire maker has traveling about continually many salesmen who are soliciting tire specifications from prospective truck customers. Through them they could disseminate knowledge on the evil effects of overloading, and the salesman could play the part of inspector, if you choose to call it such, collecting evidences of overloading as in the case mentioned earlier in this article. If this tire representative will secure public weigher's sheets for overload, and the tire maker mail these sheets to the truck user, together with a diplomatic letter calling attention to the results of overloading, and in a polite way withdraw the guarantee from the tires they are using, it would have an immediate effect. The truck user does not want to lose the guarantee on his tires, and will immediately sit up and take notice, and the matter can then be amicably adjusted and tires reguaranteed for a reduced mileage, which would be a penalty for overloading. If the tire makers would get together, decide on a total load for different sizes of tires, have same cast in figures on their tires, and would then insist by means of frequent inspection that the tires be not overloaded, they would greatly assist in the elimination of this evil.

The industry is new, and a vigorous campaign against overloading carried on now, the truck manufacturer and the tire maker co-operating, will eliminate this evil. If not eliminated at once, it will grow to serious proportions, involving heavier construction and larger tires and a consequent increased cost of production, and will also lead to legislation probably prohibiting more than a certain weight being carried on a certain size tire, this to protect roads and bridges.—G. J. Loomis, General Sales Manager, Speedwell Motor Car Co.

The Motorists' Bookman

ONE of a series of "Outlines of Industrial Chemistry," "The Chemistry of the Rubber Industry," by Harold E. Potts, M. Sc., combines the features of a complete and thorough text for study of the rubber industry, a general treatise of the rubber industry from the standpoint of pure chemistry, and a book for the use of the practical chemist, who desires the working knowledge of the chemistry of rubber, requisite to the pursuance of his calling, with a thorough ground work of analytical chemistry in its special phases as employed in the manufacture of rubber.

Accordingly, the author has entered deeply into the discussion of points considerably removed from the actual compounding and working of this substance, in order to equip the student with an intimate knowledge of its true chemical nature to aid him in intelligent comprehension of its physical possibilities; recognizing that the practical application of its physical properties and phenomena depend upon an intimate knowledge of its chemical constituency and faculties. In permitting his discourse to apparently wander from the practical, he has pursued a definite and plausible policy of broad discussion, and those who follow him in these discussions, derive thereby a clearer concept of the subject in its broadest entirety, than would be possible were the stricter form of diction adhered to by the author.

Following the author through his work, rubber is first treated in the abstract, its methods of production are briefly outlined, its identity as a colloidal substance is established, and a complete exposition of all of the characteristics of colloids to which class rubber belongs as distinguished from crystalloids is given. The analogy between these two classes of matter is broadly explained. The division of colloids into two solutions, sols and gels, their relative degrees of dispersion and microscopic division, their molecular movements, and the relative gravity of their constituents, is described and applied to their manifestations in crude latex. The chemical manifestation which reveals itself in the phenomena of coagulation is exhaustively treated, with its relation to colloidal emulsoids.

The production of raw rubber is next analysed, its extraction from the various plants, vines, shrubs, and trees, and coagulation of the extracted latex.

"The process of coagulation is one apparently depending on the removal of the protective film of protein or other protective colloid," says the author.

"The globules rise through the liquid,

Practical Rubber Chemistry

coalesce, and yield a tough elastic mass of rubber, which may be regarded as an emulsoid gel. Coagulation is evidently a colloidal problem. Yet the actual coagulation is a relatively simple matter till the quality of the resulting rubber gel is considered. Much depends upon the completeness, and therefore to some extent on the speed with which the liquid rubber in the globules changes to the tough elastic gel. Incomplete coagulation will tend to make the rubber tacky, while coagulation with an excess of acetic acid is liable to lead to a very close-meshed, and therefore brittle rubber. Further the color at all events seems intimately connected with the presence of degradation products of the proteins, probably of a phenolic nature. This again depends on the presence of ferments in the latex, which are capable of accelerating decomposition.

"Coagulation is effected—in the Amazon region—by smoking the latex over a wood fire in which the palm nuts, urikuri, are burning. A paddle is dipped in the latex and rotated in the smoke. After some time, more latex is poured on and the process is continued till a mass of rubber of considerable size is obtained. After removing the paddle by cutting the lump in half, the rubber loaf is ready for shipment."

Few realize that this process is chemically essential, the usual assumption being that it is merely a crude form of boiling down, but as is stated further:

"In this extraordinary process the coagulation is effected by the combined action of heat and smoke. The nuts in burning give off carbon dioxide, acetic acid, creosote and other substances. The rubber is deposited in successive thin films, each of which is thoroughly exposed to the action of the smoke, so that coagulation is complete. Further the sterilizing effect of the smoke on the ferments present tends to inhibit the decomposition of the protein. In spite of the apparently crude nature of the process, it yields rubber which is, on the whole, better than any other."

This process is, of course only one of many, being the one employed in the Amazon region, in the production of Para rubber. The different processes are classified as follows: Coagulation by heat, by creaming, by chemical agents, by heating and soaking, and by chemical treatment with subsequent extraction with solvents. Of the first process, the methods used are by smoking, boiling, evaporation, trickling, and separation on the

human body. In the second process, the methods are, creaming after dilution with water, filtering, washing, and pressing; mechanical creaming, combined with acid coagulation. The third process is accomplished with both mineral and organic chemicals of various nature. The last two methods are purely local, the fourth being peculiar to the Congo, and the last to Mexico.

"It has been shown that the quality of the rubber produced from a given latex varies greatly according to the method of coagulation employed. The source of latex is far less important than the method of coagulation."

The defects of crude rubber are carefully enumerated, analyzed, and accounted for, including tackiness, retention of acid coagulating elements in dirty rubber, and lack of uniformity in plantation rubbers. Treating of the further processes in the preparation of rubber for manufacture, washing, drying, crepeing, etc., requisite to the production of technically pure rubber, regarding which, the observation is made:

"The dried rubber is weighed, and the loss on washing is expressed as a percentage on the crude raw rubber. This loss, in the case of Para, usually amounts to about 16 per cent. The low-grade crude rubbers lose very much more: thus Assare scrap may lose as much as 50 per cent. The loss consists of moisture, dirt, and certain constituents of the latex, such as sugars, etc. A recent development is the sale of semi-washed rubbers which have been partially washed, so that the loss on washing may be guaranteed to a certain extent."

Technically pure rubber having been made thoroughly familiar to the reader, the work continues with its chemical phase, with the following conclusion:

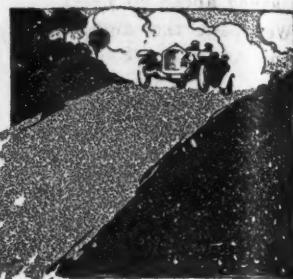
"Strong sulphuric acid has a very destructive action. Concentrated nitric also destroys the rubber with extreme rapidity, yielding yellow products containing aromatic acids. On treatment with alkalis they become brown, a reaction which is similar to the well known xanthoprotein reaction of proteins. Alkalies render rubber sticky. Ammonia tends to emulsify it. By the action of nitrous fumes, various nitrous products have been obtained."

This chapter is appended by an analysis that is very complete, and serves to condense the whole matter into a definite composed idea.

In a similar manner the subjects of manufacture, or "the art of compounding," vulcanization, reclaiming, rubber substitutes, and analysis and estimation of manufactured rubber are treated.

More than 120 authors have been consulted and quoted in the book, and very complete reference guides are appended. Much space has been devoted to the discussion of practical formulae, and outlines of analysis. Constable & Co., London.

Routes and Touring Information



HARDSHIPS and difficulties do not always beset the path of the trans-continentalist, according to R. C. Bridge and Louis A. Cortier who recently traversed the western half of the continent in a 40-horsepower Stoddard-Dayton. Between the thrill of climbing mountain roads at night or driving over rocky arroyas, they took time to enjoy trout and bass fishing in the numerous streams and lakes which they passed. Traveling leisurely, they timed their trip to cross the Mohave desert at night and in the mountainous regions they left the trail to do their own scouting for deep pools where speckled beauties await the fly. Nor was this their only diversion. Mr. Cortier's log of his trip begins at Grand Rapids, Mich., but he picked up the ocean-to-ocean trail at Chicago, where preparations for the western half were made. The outfit consisted of a silkene tent, axe, shovel, blankets, cooking utensils, five suitcases, trunk, two extra casings, five extra rims, inner tubes, 5-gallon desert water bag and hunting and fishing outfits.

"Our load was a heavy one," said

Ocean-to-Ocean Trip

Mr. Cortier, "but we came through without breaking a spring. Our first day's run after leaving Chicago was 234 miles to Bloomington, Ill. via Peoria and in that distance we encountered some very bad roads owing to the heavy rains the day before leaving Chicago. We spent 3 days in Bloomington during which time it rained constantly and the roads were very muddy from Bloomington to Burlington, Iowa.

"We crossed the Mississippi on a small ferry boat and were landed on the Iowa side in a very low marshy place and an ordinary car would have had to have assistance to get to the road but we got through without being towed.

"We reached Des Moines, Ia., at 10 o'clock the morning of June 5 and just escaped a heavy rain. We stopped in Des Moines 2 days awaiting favorable weather, leaving the morning of June 7 and reached Omaha the same evening where we again laid up 2 days on account

of rain. We were very unfortunate about getting caught in the rains as we only got 70 miles west of Omaha where we were forced to wait 2 days more on account of muddy roads and it was real gumbo, too.

"Part of the time our car was buried to the axles and with the greatest difficulty we escaped being towed. We made only 70 miles June 12, and went into camp near Clocks, a small station on the Union Pacific where we spent another 2 days and drove to North Platte on a very muddy road. The road conditions were very bad nearly all the way across Nebraska owing to the fact that they were repairing the roads and on account of the long rains June 15, we passed two cars stuck in the mud and turned out and went around them after offering to pull them out. We camped that night at a small town called Lodgepole 120 miles east of Cheyenne and had some excellent bass fishing.

"We made Cheyenne the next night and spent 2 days resting after our siege of mud. We experienced our first tire trouble 40 miles west of Cheyenne on June 19, where we blew out a rear casing on Shennon pass, at an elevation of 8,000 feet. We discovered a very good trout stream about 5 miles west of this place and spent 2 days angling for mountain trout and were very well repaid as we got some nice strings of the speckled beauties.

"We broke camp June 21, and drove to Medicine Bow. After leaving Medicine Bow we found some very bad roads. There were dozens of washouts and sand in places was very deep, causing us to use our lower gears for miles. We finally left the sand and washouts and started a very long, heavy mountain climb over rough rocky roads having to adjust our carbureter two or three times on account of the high altitude.

"Our Blue Book route took us into Granger, Wyo., where we found we would have to ford a river about five feet deep or else go about 30 miles around by another route and we chose the latter, spending the night in a small mining town called Kemmever. Our next day's run took us into Ogden, where we left the car and went to Salt Lake City, spending 2 days sight seeing. We left Ogden on Wednesday, June 26, at 11 a. m., taking the northern route around Great Salt Lake via Promontory Point, a road little used by motor cars and in very poor condition



ROAD IN MT. RANIER PARK WITH MT. TACOMA IN BACKGROUND

as there is lots of sand and washouts, but we saved about 40 miles.

We spent the night in Lucin, on the main line of the Southern Pacific. From Lucin to Ely, which is about 200 miles, we had desert all the way—the Great American desert—but the roads were fine with a few exceptions. I might add that the best roads we found on the trip were in Nevada. On Saturday we drove from Ely to Tonopah, 189 miles, but were held up about 3 hours at a ranch called Current Creek, on account of a cloudburst, and on leaving this place we drove through water nearly 2 feet deep, as the road was all under water for about 7 miles.

"At times it looked as if we would have to wait for the water to run off, but we kept on and finally got on to higher ground and out of the rain belt. We arrived at Tonopah rather late and didn't leave until about 2:30 the next afternoon and made Big Pine, Cal., at midnight after the hardest mountain climb we experienced on the entire trip. We crossed three peaks in the White mountains, the highest being 7,900 feet and the lowest 7,000 feet. No car should attempt this trip by this particular route unless it has lots of power and good brakes. You go up and up for miles, but the descent is worse than the ascent, as it requires both the emergency and foot brakes to hold the car. Had one brake failed to work I shudder to think what might have happened. We crossed all of these peaks after night.

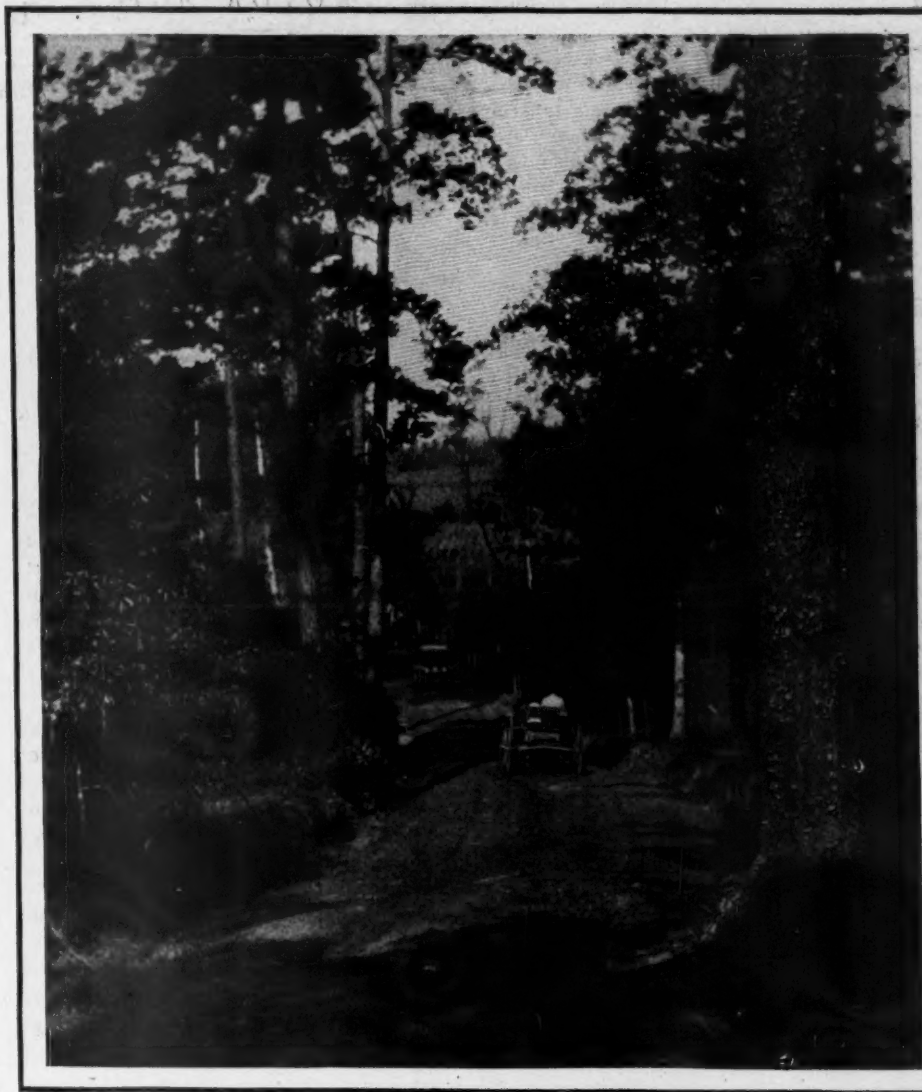
"Monday morning at 9 o'clock we left Big Pine, taking lunch at Lone Pine and leaving the latter place at 1:30 on our Mojave desert run. The first 20 miles after leaving Lone Pine the roads were very sandy and called for plenty of gear work. We blew out two casings, causing about 3 hours' delay. We had just got nicely started on the desert proper when we found that darkness was rapidly approaching.

"We held a consultation and decided to cross the desert that night, arriving in Mojave shortly after midnight. We had been dreading the desert part of the trip all the way, and were pleasantly surprised to find the road in such good shape. The most part of the road was smooth and hard and very easy to follow. Our last day's run was from Mojave to Los Angeles."

ASKS ROUTE TO BUFFALO

Winchester, Ind.—Editor Motor Age—I am going to make a trip to Buffalo, and would like to know the best route by way of Sandusky and Cleveland.—C. H. Davis.

Go to Ridgeville, Redkey, Petroleum, then east to Domestic, Berne, Mercer, Mendon, Monticello, Spencer, Lima, Beaver Dam, Bluffton, Mt. Cory, Findlay, Arcadia, Fostoria, Bascom, Tiffin, Green Springs, Clyde, Castalia, Sandusky, Huron, Vermillion, Lorain, West Dover, Rocky River and Cleveland.



VIEW TYPICAL OF MISSISSIPPI ROADS AS FOUND BY THE FLANDERS PATHFINDER

Follow the routing as outlined for the inquiry from La Salle, Ill., but continue from Westfield, Pa., on to Buffalo instead of heading for Lake Chautauqua. The entire distance is in the neighborhood of 475 miles.

ILLINOIS TO NEW YORK

La Salle, Ill.—Editor Motor Age—Kindly give me the route from La Salle, Ill., to Lake Chautauqua, N. Y., thence to Niagara Falls, and return home by way of the Canadian route. Is it advisable to return by way of Canada?—W. W. Greaves, M. D.

Your route lies to South Bend and leads through Utica, Ottawa, Marseilles, Morris, Channahon, Joliet, Gaugers, New Lenox, Frankfort, Richton, Dyer, Sehererville, Merrillville, Deep River, Valparaiso, Westville, Pinhook, Laporte, Stillwell, South Bend.

Toledo is 164 miles distant through Mishawaka, Osceola, Dunlap, Goshen, Benton, Ligonier, Wawaka, Kendallville, Waterloo, Butler, Edgerton, Bryan, Archbold, Wauseon, and Crissey, but it is not necessary to go further than Bryan towards Toledo, as a road branches off here for Cleveland and routes through Ridgeville,

Napoleon, Liberty Center, Bowling Green, Pemberville, Woodville, where the road from Toledo comes in, and continues to Fremont, Clyde, Bellevue, Monroeville, Norwalk, Townsend, Wakeman, Oberlin, Rock River, and Cleveland. Cleveland to Erie is 101 miles along the lake shore through Wickliffe, Willoughby, Painesville, Madison, Unionville, Geneva, Saybrook, Ashtabula, North Kingsville, Conneaut, West Springfield and Girard.

Point Chautauqua is 41 miles from Erie and you will pass through the towns of Wesleyville, Northeast, Ripley, Westfield, Mayville, and Hartfield.

For Buffalo and the Falls return to Westfield, and route through Brocton, Fredonia, Silver Creek, Irving, Buffalo, and Tonawanda.

Returning by way of Canada, to Hamilton, which is 51 miles, the itinerary is St. Davis, St. Catharines, Jordan, Grimsby, and Hamilton. Port Huron is 143 miles distant, the intermediate towns being Alberton, Brantford, Cathcart, Woodstock, Ingersoll, Thamesford, London, Hyde Park, Adelaide, Warwick Village, Kertch, Sarnia and the ferry to Port Huron. Continue through St. Clair,

Muttonville, Mount Clemens, Detroit, Dearborn, Wayne, Ypsilanti, Ann Arbor, Lima Center, Chelsea, Grass Lake, Jackson, Albion, Marshall, Battle Creek and a mileage of 187. The next stretch is through Galesburg, Kalamazoo, Paw Paw, Dowegiac, Summerville, Niles, and South Bend, retracing the going route back home to La Salle.

TO THE PACIFIC COAST

San Angelo, Tex.—Editor Motor Age—Give me a route from this place to Los Angeles, Cal. I want the southern route.—C. R. Webb.

Your line of march will take you to Carlsbad, Sterling City to Big Springs, from which point you are referred to the answer to an inquiry from Anson, Tex. It is in the neighborhood of 85 miles to Big Springs.

TO ROANOKE, VA.

Delphos, O.—Editor Motor Age—I am contemplating a trip from here to Roanoke, Va. I would like the best routing, with road conditions. I also want to go to Winchester, Ky. Is there a route following the C. and O. railroad from Roanoke to Winchester? I have taken the trip from here to Chattanooga and know what bad roads are.—C. C. Kitts.

Go through Elida to Lima, which is about 13 miles, then to Columbus, 89 miles, through Westminster, Holden, Roundhead, Huntsville, Bellefontaine, Zanesfield, Middleburg, Marysville, Dublin and Columbus. So far the road is principally gravel.

From Columbus to Wheeling, W. Va., over the National highway, you travel a distance of 128 miles, routing through Reynoldsville, Etna, Kirkville, Hebron, Jacktown, Linnville, Brownsville, Hope-well, Zanesville, Norwich, New Concord, Cambridge, Washington, Elizabethtown, Fairview, Hendricksburg, Morristown, Loydsville, Bridgeport and Wheeling.

Still following the National highway through West Alexander, Claysville, Washington, Beallsville, Brownsville, Uniontown, Somersfield, Petersburg, Keyser's Ridge, Grantsville, Frostburg, Elkhart, Cumberland, Flint Stone, Hancock and Clear Springs to Hagerstown, which is 200 miles.

For a visit to the battlefield of Gettysburg it is a run of 34 miles over a stone road on which toll is charged almost the entire distance. The towns passed through are Leitersburg, Waynesboro, Rouzerville, Fountaindale and Fairfield.

There are two roads you can take to Winchester, one being 42 miles over a stone road, the other 53 miles over pike; both have toll charges. The first mentioned routes through Williamsport, Falling Waters, Berkeley, Martinsburg, Clarks-ville, Bunker Hill, Winchester; the second is through the towns of Tighmantown, Antietam, Sharpsburg, Shepherdstown, Halltown, Charlestown, Clifford, Berryville.

You will find it a distance of 91 miles to Staunton through Middletown, Strasburg, Maurertown, Woodstock, Edinburg,

Blue Book Road Reports

The Blue Book car which has just completed over a month's work in Ohio reports the following on new and old routes:

Zanesville to Cincinnati via Lancaster, Circleville and Washington Court House is good gravel and stone road all the way over slightly rolling country, making an enjoyable trip, and to Jeffersonville and Springfield is fine gravel or macadam.

Cincinnati to Springfield via Lebanon and Xenia is also good gravel all the way, making an important connection for through trips into the northern part of the state.

A new route is from Cincinnati to Dayton via Hamilton, Middletown and Miamisburg. Although not very well known or as much used as the older route via Lebanon, this is not only an excellent option but fully as good as the other route and highly recommended.

Cincinnati to Columbus via Lebanon, Dayton and Springfield, although a hard road all the way, certain parts of it are badly cut up due to heavy travel. Considerable work is being done on this route, however, and it should be considerably improved for next year although not very bad at this time.

Columbus to Washington Court House via Harrisburg and Mt. Sterling is over fine macadam for the first part and then good gravel the remainder.

A new route from Cincinnati to Maysville, Ky., via Newport, Alexandria, Grants Lick, Brooksville and Morantburg, is slightly longer than the river road but good stone pike all the way, a little rough in spots but not bad at any time.

Maysville to Hillsboro via No. Liberty and Winchester is a new route. This is over real country most of the way and road conditions are far from being good. It can not be recommended as a tourist route.

Another new route is from Hillsboro to Portsmouth via Peebles and Otway. The Blue Book car covered this route trying to find a feasible direct connection between Cincinnati and Portsmouth and after careful inquiry this seemed to be the most advisable feature. Conditions between Hillsboro and Portsmouth are found to be the worst so far encountered in Ohio and should not be used by those who are not prepared for the roughest kind of going.

Mt. Jackson, New Market, Harrisonburg, Mt. Crawford, Burkstown and Verona; and 89 miles to Roanoke over a good dirt road with several stretches of macadam over very rolling country through Minte Springs, Greenville, Midway, Fairfield, Lexington, Fancy Hill, Natural Bridge, Buchanan, Troutville, Cloverdale and Roanoke.

Motor Age knows of no route for you to follow to get beyond the Alleghany mountains into Kentucky except by shipping your car, and picking up a road at Pikeville, Ky. To route by motor car the entire distance over the most feasible road, which in itself is very bad in stretches, would take you through Winston-Salem, N. C., Charlotte, Greenville, S. C., Atlanta, Ga., Chattanooga, Tenn., Knoxville, Cumberland Gap, Mt. Vernon and Winchester. From Pikeville, Ky., a road lies through Paintsville and Camp-ton to Winchester.

ILLINOIS TO SOUTHERN TEXAS

Varna, Ill.—Editor Motor Age—Kindly furnish the best and most direct touring route from Peoria, Ill., to Mercedes or Mission in Southern Texas. These towns are on the old military highway from Fort Sam Foryce to Brownsville.—A. R. Wright.

A good road to Keokuk is through Farmington, Fairview, Ellisville, Prairie City, Bushnell, Blandinsville, La Harpe, Carthage, Elvaston and Hamilton. You now are referred to the answer to the communication from Keokuk, Ia., for the road across Iowa over the Waubonsie trail

and on into Nebraska as far as Fairmont.

The trip from Fairmont to San Antonio will be found outlined in the request from Sioux Falls, S. D., to Laredo, Mex. The balance includes the following towns: Calveras, Floresville, Poth, Falls City, Karnes, Kenedy, Pettus, Normanna, Beeville, Skidmore, Alice, Kingsville, Raymondville, and McAllen with Mission lying to the northwest and Mercedes to the south reached through Pharr, San Juan, and Donna. The Blue Books 4 and 5 will only give you running directions as far as Fort Worth. From that town to Skidmore you can secure a route guide from Dawson & Potter of Fort Worth, but there is no log of the balance of your trip to our knowledge.

IOWA TO COLORADO

Keokuk, Ia.—Editor Motor Age—Kindly give the best route from Keokuk to Denver, Colo.—S. Hamill.

The Waubonsie trail is your route across Iowa, and according to recent reports seems to be one of the best sign-boarded roads in that section of the country. Telephone poles are marked with black and white bands at all intersections. To Centerville it is 110 miles, routing through Mt. Clara, New Boston, Charleston, Donnellson, Primrose, Farmington, Mt. Sterling, Cantril, Milton, Pulaski and West Grove. The balance of the trail to Nebraska City, 178 miles, is Jerome, Promise City, Corydon, High Point, Leon, Decatur City, Kellerton, Mt. Ayr, Conway, Gravity, Clarinda, Shenandoah, Sidney and Knox, then crossing on a toll bridge into Nebraska. When at Shenandoah, you might call upon Henry Field, who has returned recently from a trip to Denver, and doubtless he can give you some valuable assistance.

A distance of 159 miles over the Omaha-Denver transcontinental route will find you in Hastings. This trail is also well marked with black and white bands on telephone poles. The towns to pass through are Dunbar, Syracuse, Unadilla, Palmyra, Lincoln, Emerald, Milford, Friend, Exeter, Fairmont, Grafton, Sutton, Saronville, Harvard and Hastings. To McCook it is 146 miles, passing through Minden, Axtell, Holdrege, Atlanta, Oxford, Edison, Arapahoe, Holbrook, Cambridge, Bartley, Indianola and McCook.

Continuing on this trail you will reach Sterling, Colo., a distance of 167 miles, by routing through Culbertons, Beverly, Palisade, Wauneta, Imperial, Lamar, Holyoke, Haxtum and Sterling.

The next stretch is 146 miles to Denver, where excellent time should be made. The itinerary is Atwood, Hillrose, Brush, Fort Morgan, Bennett, Watkins and Denver.

It is more possible to travel over the above roads without a guide than any other between Keokuk and Denver at the present time, but should you want running directions the Omaha-Denver trans-

continental route guide published by the Iowa Publishing Co., Des Moines, Ia., will give you such from the Missouri river to Denver. The entire trip is also found outlined in the Blue Book No. 5 among numberless others west of the Mississippi and will serve to guide you on future trips.

GOING TO SOUTH DAKOTA

Grayslake Ill.—Editor Motor Age—Please outline a route from Grayslake, Ill., to Elkton, S. D., via Dubuque, Ia. Also, a routing from Grayslake to Wichita Falls, Tex.—C. E. Allen.

Your distance to Dubuque, Ia., is 162 miles. You can route through Hainesville, Volo, McHenry, Woodstock, Harvard, Chemung, Belvidere, Cherry Valley, Rockford, Freeport, Lena, Wadham, Nora, Warren, Shullsburg, Leadmine, Benton, Hazel Green, Fairplay, Dubuque.

Follow the Hawkeye highway across Iowa, which routes through the following towns: Julien, Centralia, Farley, Dyersville, Earlville, Manchester, Independence Waterloo, Cedar Falls, New Hartford, Parkersburg, Austinville, Ackley, Iowa Falls, Alden, Williams, Blairsburg, Webster City, Fort Dodge, Barnum, Manson, Pomeroy, Fonda, Newell, Sulphur this distance 262 miles. Leaving the Springs and Storm Lake. You will find highway and heading north you should route through Truesdale, Rembrandt, Sioux Rapids, Spencer, west to Hartley, Sheldon, Perkins, Doon, Rock Rapids, Lester, Larchwood, Banclore, and Sioux Falls, being approximately 143 miles.

The Meridian road is now followed to Dell Rapids and Flandreau. Elkton is only a short distance to the north of Flandreau.

For the routing to Wichita Falls, Tex., after reaching Rockford, Ill., head for Clinton, Ia., by way of Byron, Oregon, Dixon, Sterling, Morrison, Union Grove, Fulton, Lyons, and Clinton. The Iowa transcontinental route can be used to Ames by routing through Elvira, De Witt, Grand

Mound, Calamus, Wheatland, Lowden, Clarence, Mechanicsville, Lisbon, Mt. Vernon, Marion, Cedar Rapids, Belle Plaine, Chelsea, Tama, Montour, Marshalltown, State Center, Colo, Ames.

Des Moines is 32 miles south of Ames and reached via Hukley and Ankeny; and the River-to-River through Waukegan, Ontarioville, Adell, Redfield; the White Pole to Dexter, Stuart, Menlo, Casey, Anita, Wyota, Atlantic; thence the River-to-River to Marne, Walnut, Avoca, Minden, Neola, Underwood, Weston, Council Bluffs and Omaha.

The balance of the route to Wichita Falls is incorporated in the answer to an inquiry from Sioux Falls, S. D., in this issue. All running directions included in Blue Books 4 and 5.

TOURING IN THE EAST

Ellis Island, N. Y.—I want to make a trip from New York to Boston via Springfield, Mass., and would like the best route and distance. Also would like another route from New York to Williamsport, Pa., and Harrisburg, Pa.—M. H. Foster, M. D.

The shore line route to New Haven unfortunately is in very little better condition this year than it was last, but there are no serious detours on account of road construction. It is a distance of 74 miles through Columbus circle, New Rochelle, Larchmont, Mamaroneck, Rye, Portchester, Greenwich, Ct., Coscob, Mianus, Stamford, Darien, Norwalk, Westport, Southport, Fairfield, Bridgeport, Straford, Milford, and New Haven.

The best road to Hartford, Conn., is 37 miles through Wallingford, Tracy, Merider, Berlin; and Springfield lies 27 miles north if the road on the east side of the river is taken through East Hartford, South Windsor, Warehouse Point, Enfield, Thompsonville, Longmeadow, Springfield. If the west side of the river is chosen you will find it 26 miles through Windsor, Windsor Locks, Suffield, and Springfield. A suspension bridge connects Warehouse

Point and Windsor Locks which enables you to cross over and finish on the opposite side of the river if preferred.

The balance of the route lies through Worcester, 51 miles, and Boston, 44 miles. The towns are Masonic Temple, N. Wilbraham, Palmer, West Warren, Warren, W. Brookfield, Brookfield, Spencer, Leicester, Cherry Valley, Worcester, Shrewsbury, Northboro, Marlboro, S. Sudbury, Wayland, Weston, and Boston.

TO NIAGARA FALLS

Baraboo, Wis.—Editor Motor Age—We are contemplating a trip through Milwaukee, Grand Haven, Detroit, Toledo, Cleveland, etc., to Niagara Falls. What is the best route from Grand Haven to Detroit? How many miles, and what is the character of the road?

Will a Wisconsin license be honored in Michigan, Indiana, Ohio, Pennsylvania and New York? Any further information or suggestions will be appreciated.—A. G. Gollmar, Jr.

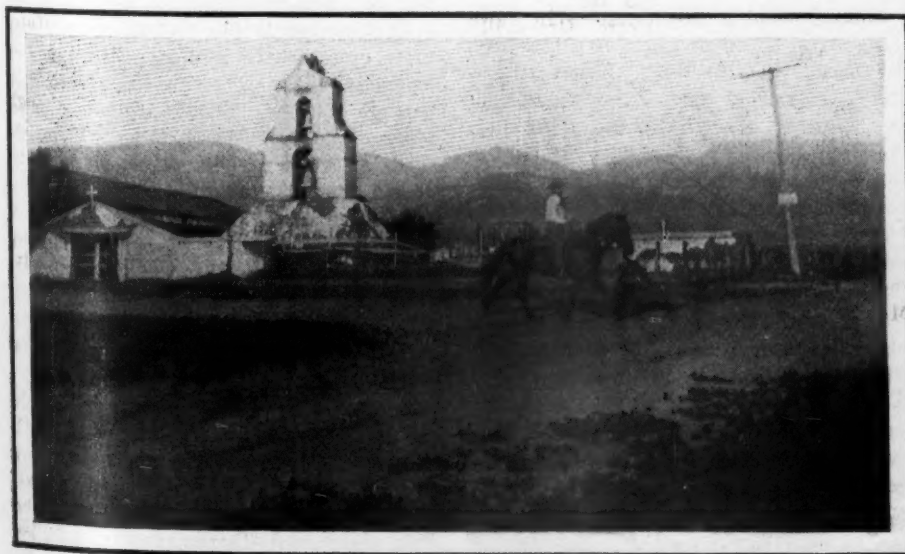
The section of the road from Grand Haven to Grand Rapids, a distance of 31.2 miles, is over good natural roads which take the motorist via Allendale. The 148.7 miles between Grand Rapids and Detroit is over an almost straight road with gravel practically all the way, which is good under ordinary conditions. Some of the intermediate points are Cascade, Lake Odessa, Sunfield, Grand Lodge, Lansing, Weberville, Fowlersville, Fleming, New Hudson, Howell, Brighton, and Farmington. To reach Toledo your best route will be via Wayne, Ypsilanti, Saline, Clinton, Tecumseh and Riga, with a mileage of 92.9 miles, with fine macadam roads leading out of Detroit and into Toledo, with fair roads otherwise. Going eastward from Toledo with the next objective point Cleveland, you should pass through Woodville, Fremont, Clyde, Castalia, Sandusky, Huron, Vermillion, and Lorain, a run of 120.6 miles. Over a good gravel or stone road all the way to Erie, Pa., the route is via Euclid, Willoughby, Painesville, Unionville, Geneva, Ashtabula, Conneaut and Girard, making 101 miles; continuing toward Niagara Falls some of the wayside points will be North East, Westfield, Brockton, Fredonia, Silver Creek, Irving and Evans to Buffalo 89.6 miles; while to reach the Falls is a further run of 21.6 miles through Tonawanda, over asphalt, macadam and brick roads.

Your Wisconsin license will exempt you from registering in the states named.

TEXAS TO LOS ANGELES

Anson, Tex.—Editor Motor Age—I would like a route from Abilene, Tex. to Los Angeles, Cal.—N. C. Potts.

You will notice there is another inquiry for this route from a party in San Angelo, Texas, and it is suggested that you communicate with Mr. Webb with the idea of the two cars traveling together. You



SANTA PALA MISSION IS BUT A SHORT JOURNEY FROM SAN DIEGO, CAL.

will find such a plan useful in many instances.

Through Texas the routing lies by way of Merkel, Trent, Sweetwater, Roscoe, Lorraine, Colorado, Westbrook, Iatan, Coahoma, Big Springs, Stanton, Midland, Warfield, Odessa, Grand Falls, Ft. Stockton, Marathon, Alpine, Marfa, Aragon, Valentine, Wendell, Chispa, Lobo, Dalberg, Torbert, Grayton, Sierra Blanca, Etholen, Lasca, Finley, Ft. Hancock, Fabens, El Paso, having traveled 603 miles.

When in El Paso it would be well for you to call upon W. T. Rand, who has just recently returned from a trip to Los Angeles, and whose story appears in Motor Age of August 29. He will be able to give you some valuable pointers.

About 20 miles out you reach the New Mexico line and run through Canutillo, La Tuna, Berino, San Miguel, Aden, Cambray, Deming, Tunis, Gage, Willa, Separ, Lordsburg, and cross the Arizona state line to Vanar, San Simon, Bowie, Luzena, Glade, Wilcox, Cochise, Dragoon, Benson, Mescal, Vail, Wilmot, Tucson, Rillito, Red Rock, Florence, Mesa, Tempe, Phoenix, Coldwater, Liberty, Palo Verde, Arlington, Agua Caliente, Castle Dome, Gila City and Yuma. From El Paso this is a distance of 665 miles.

Crossing the Colorado river into California you continue to Ogilby, Drylyn, Glamis, Mammoth, Brawley, Imperial, El Centro, Devil's Canyon, El Campo, Potrero, Dulzura, Jamuel, San Diego, La Jolla, Del Mar, Encinitas, La Costa, Oceanside, Las Flores, San Luis Capistrano, Irvine, Tustin, Santa Ana, Anaheim, Fullerton, Habra, Bethel, Whittier, Montebello, and Los Angeles. Yuma to Los Angeles is 362 miles.

This complete routing is outlined with maps and running directions in the No. 5 Blue Book, should you care to supply yourself with one.

COLORADO TO ST. PAUL

Delta, Colo.—Editor Motor Age—I would like to have a route outlined from Denver, Colo., to Lisbon, N. D., and from Lisbon to St. Paul.—H. E. Mathers.

Two decidedly different routes can be laid before you for your choice, and possibly you would like to go one way and return the other. The going trip might be as follows: Headed north from Denver better grades are to be found through Henderson, Brighton, Platteville, Greeley, Eaton, Ault, Pierce, Nunn, Dover, Carr and Cheyenne, Wyo., being a distance of 117 miles. When in Cheyenne it is advisable to call upon E. L. Emery, who is very familiar with surrounding road conditions and a very willing help to tourists.

A gradual down grade of 102 miles going east passing through Egbert, Pine Bluff, Bushnell, Kimball, Dix, Potter and Brownson find you in Sidney, where a road lies north called the Sidney trail, composed of natural dirt roads and leading into the picturesque mountains of the Black Hills country in South Dakota. Rapid City, S.

D., is a distance of 247 miles and is reached through Alliance, Dunlap, Chadron, Oelrich, Hot Springs, Fairburn and Hermosa. If desired, a short run can be made to Sturgis and Deadwood.

Following the C. M. & St. P. east across the state with the exception of the last 40 miles before entering Sioux Falls, some of the intermediate towns are Caputa, Farmingdale, Creston, Scenic, Imlay, Conata, Interior, Weta, Kadoka, Belvidere, Stamford, Okaton, Murdo, Vivian, Kennebec, Reliance, Oacoma, Pukwano, Kimball, White Lake, Plankinton, Mitchell, Emery, Bridgewater and Sioux Falls. Motoring a distance of 146 miles north from Sioux Falls by way of Dell Rapids, Brookings, Toronto, Clear Lake, Altamont, La Bolt, Milbank and Big Stone City takes you out of South Dakota and traveling 50 miles in Minnesota through Ortonville, Clinton, Graceville, Collis, Dumont, Wheaton and White Rock will find you in North Dakota and Wahpeton, 16 miles over the state line, reached through Blackmer, Fairmont and Tyler. Lisbon is in the next county and you can secure directions at the Wahpeton garage.

The second route leaves Colorado by way of Fort Morgan in a northeasterly direction over a good fast road passing through Watkins, Bennett, Fort Morgan, Hillrose, Merina, Sterling, Iliff, Red Lion, Sedgwick and Julesburg, 210 miles. Entering Nebraska 5 miles out of Julesburg, the North Platte road is followed. To Kearney it is 197 miles and can be made in a day routing through Brule, Ogalalla, Roscoe, Korty, Paxton, Sutherland, North Platte, Maxwell, Gothenburg, Millow Island, Lexington, Overton, Elm Creek and Kearney. The next stretch is to Omaha; 195 miles, passing through Gibson, Shelton, Wood River, Alda, Grand Island, Chapman, Central City, Clarks, Havens, Duncan, Columbus, Benton, Schuyler, North Bend, Ames, Fremont, Waterloo, Elkhorn and Omaha. There are a few stretches of sand on this North Platte route, but on the whole it is practical.

Rolling country predominates in Iowa along the river from Omaha to Sioux City, Ia., through Council Bluffs, Crescent, Reels Store, Missouri Valley, River Sioux, Onawa, Whiting, Sloan, Salix and Sioux City. Crossing the Sioux river into South Dakota continue to Jefferson, Elk Point, Beresford, Worthing and Sioux Falls, from which point the route has already been outlined.

En route for St. Paul, although not necessary, you might like to go to Fargo, which lies through Enderlin, Alice, Buffalo, Wheatland, Casselton and Mapleton. Fargo to Alexandria, Minn., is 124 miles and reached through Barnesville, Rothsay, Fergus Falls, Ashby, Melby, Evansville, Brandon and Garfield. Alexandria to Minne-

apolis is a 140-mile stretch passing through Osakis, Sauk Center, Melrose, Freeport, Albany, Avon, St. Joe, St. Cloud, Clear Lake, Becker, Big Lake, Elk River, Dayton, Anoka, Osseo and Robinsonville. Follow University avenue into St. Paul. This is practically an all-dirt road with the exception of between Alexandria and St. Paul, where there are a few stretches of gravel and sand.

If you do not want to go to Fargo, return to Wahpeton, meeting the above outlined route at Fergus Falls.

SIOUX FALLS TO LAREDO, MEX.

Sioux Falls, S. D.—Editor Motor Age—I would like very much to obtain the best route from Sioux Falls to Laredo, Mex.—H. H. Parshall.

Route first to Omaha, Neb. which will be your first night's stop at a distance of 196 miles, by way of Worthing, Beresford, Elk Point, Jefferson, Sioux City, Salix, Sloan, Whitney, Onawa, River Sioux, Missouri Valley, Loveland, Honey Creek, Crescent, Council Bluffs and Omaha. Follow the Omaha-Denver transcontinental route 58 miles through Millard, Gretna, Ashland, Waverly, Havelock, Lincoln, Emerald, Milford, Friend, Exeter, and Fairmont, then head south on the Meridian road through Strand, Brunning, Belvidere, Hebron, Chester, Belleville, Concordia, Minneapolis and Salina, which will be 142 miles.

Keeping on the Meridian road straight through Kansas are the towns of Bridgeport, Lindsborg, McPherson, Moundridge, Heston, Truesdale, Newton, Wichita, Wellington, South Haven and Caldwell and so far will register 164 miles.

The Chisholm trail extends through Oklahoma and routes through Renfrow, Medford, Pond Creek, Kremlin, Enid, Waukomis, Hennessey, Dover, Kingfisher, El Reno, Pocasset, Chickasha, Verden, Anadarko, Apache, Rohrer, Lawton, Emerson, Randlett, being about 290 miles. At El Reno which is 122 miles you can turn east and a distance of 27 miles will find you in Oklahoma City.

Burkburnett is the first town in Texas after crossing the Red river on the toll bridge and the route to Ft. Worth lies through Wichita Falls, Windthorst, Antelope, Jacksboro, Whitt, Adell, Weatherford, Annetta, Aledo, Ben Brook and Ft. Worth which is 160 miles.

Between Ft. Worth and San Antonio—315 miles—the towns along the popular route lie through Cleburne, Grandview, Hillsboro, Itaska, Hillsboro, Abbott, West, Waco, Temple, Granger, Georgetown, Round Rock, Austin, Buda, San Marcos and New Braunfels.

A road follows the railroad to Laredo but between San Antonio and Pearsall it is so sandy that most prefer to go by way of Castroville, and Hondo to Pearsall and then follow the tracks across the Frio river and thence through Dilley, Cotulla, Encinal, Cactus and Laredo. This is about 180 miles.



Among the Good Road Enthusiasts

LANSING, Mich., Sept. 9.—State Highway Commissioner Ely furnishes the following on the progress of good roads building in Michigan since the state highway department was established 7 years ago:

The first year, 1906, the department spent \$30,000 for road improvement. In subsequent years the expenditures were: \$60,000 in 1907; \$110,000 in 1908; \$160,000 in 1909; \$150,000 in 1910; \$150,000 in 1911; \$245,000 in 1912. For 1913 there are \$245,000 available. This money, however, does not nearly represent the total spent on roads in Michigan, most of this money being paid out in rewards for good roads constructed by townships.

There are forty-six counties under the good roads system. For every mile of class A road the state pays \$250; for every mile of class B road, \$500, and for every mile of class C road, \$750, and for every mile of class E and F road, \$1,000.

In April, 1912, a number of counties voted to bond for good roads, these, with the amounts, being as follows: Genesee, \$500,000; Kent, \$600,000; Ottawa, \$500,000. In Kenzie county several townships decided to bond as follows: Avon, \$10,000; Baraga, \$10,000; Weldon, \$10,000; Benzonia, \$15,000; Homestead, \$20,000.

For the fiscal year ending June 30, the counties above enumerated applied for aid in building 644 miles of road. Up to date this year there have been built 382 miles, while before the end of the present fiscal year it is expected 500 miles will have been built.

Since the department was created 1,232 miles have been built with state aid, while applications for state aid are on file for 865 miles more. The total amount of state aid given since 1906 has been \$835,000.

On November 5 the taxpayers of Delta county will vote on a proposition to bond for \$100,000 for good roads, September 14 the township of South Haven, Van Buren county, will vote on a proposition to bond for \$25,000.

LONDON USING GRANITE

London, Sept. 1.—Granite is displacing wood pavement in several London streets. In some quarters an outcry is made that the metropolis is going back to the old cobblestone days, to become a noisier city than ever. In the view of experts there is no greater mistake. The prepared granite now in use, they say, bears no comparison to the antiquated cobblestones. The advent of heavy motor traffic has so enormously increased the cost of road upkeep that the matter is of vital interest to rate payers.

Some of the local authorities are paving short experimental stretches of road with granite, saying it is not insanitary like the wood pavement, which absorbs refuse, and

Michigan Reports on Highways Cost—Blazing the Meridian Trail

has not a tendency, like asphalt, to dissolve or rot under the drip of oil or gasoline.

The principal objection to granite was the noise, but this has been overcome by laying the prepared granite in segmental courses of crescent shape on a tar bed, which absorbs the noise. A mixture of boiling pitch and oil is forced into the joints of the stones and the pitch mixes with the bottom bed and makes a solid carriageway. In some cases the blocks are laid on sand and, lying in segmental courses, there is no undue wear. It increases the foothold for horses. On cobblestones the horse stepped on only one block, which might be slippery. Under the new system it gets a foothold on three or four.

BLAZING MERIDIAN TRAIL

Winnipeg, Can., Sept. 9.—Under the auspices of the International Road Association, a tour for the purpose of exploring and advertising the new Meridian road, from this city to Dallas, Texas, will start tomorrow. An official log will be made of the road and topographers will prepare a map detailed for use in the Blue Book. Cities along the way are expected to entertain the tourists. It is expected that this route, which has been extensively improved, and thoroughly sign-boarded, will become popular, as soon as it is given the proper amount of publicity.

The itinerary contemplates runs of over 100 miles per day, through Grand Forks, N. D., Wahpton, Watertown, S. D., and Bridgewater, S. D., reaching Norfolk, Nebr., on Sunday night. Sunday will be a day of rest, the tour being resumed at 8:30 Monday morning, and continuing south through the states of Nebraska and Kansas to Wichita. Here the road forks, the route south continuing through Oklahoma City to Dallas, and returning via Ft. Worth, El Reno, and Wellington to Wichita, where the tour will end. Side trips are planned through Lawton, Oklahoma, to Medicine Park and the Fort Sill military reservation; and to the 101 ranch near Ponca City, Oklahoma. In all it is expected that about 3 weeks will be consumed by the trip and close to 2000 miles will be covered.

CONNECTING LINK ALMOST CERTAIN

Toledo, O., Sept. 7.—One of the dreams of motor enthusiasts in this section has been the reconstruction with good pavements of the old military road between Toledo and Detroit, which in the dim past was used by the stage coach. The old

military road, which before it was used by Wayne, Winchester, Harrison and other heroes of pioneer fame, was an Indian trail, has been put into splendid shape and is one of the best roads in the country from Toledo to Chicago. The 10-mile stretch between Toledo and Maumee was completed only last year. At this time it was expected that the highway between Toledo and Detroit would become a fact.

The Ohio roads up to the state line were in fair shape but portions of the road between Toledo and Detroit in Michigan territory was impossible to use in anything but the best of weather. The improvement of this road, making a splendid stretch from Detroit to Chicago, was agitated by motorists of both Toledo and Detroit the members of the chambers of commerce of both cities taking a part in the agitation. These organizations at last decided that they would assist the counties in raising funds and it was believed that the road was an assured fact. Other difficulties however arose, some townships in Michigan territory narrowly opposing the improvement. After long and bitter controversy Erie township, which long had been a stumbling block, has voted a \$40,000 bond issue for the construction of the highway. Bids were solicited and the lowest bid by a responsible firm was \$41,000. The \$40,000 fund voted is said to be the limit for Erie township and the Toledo good roads committee of the chamber of commerce has been notified that if Toledo and Detroit want the model highway between the cities constructed they must raise the \$1,000 shortage in the road fund. C. A. Mauk, chairman of the Toledo good roads committee in discussing the matter declared that Toledoans are willing to contribute a fair sum to be distributed through the twelve townships through which the road must pass.

WANT ROAD TAX INCREASED

Indianapolis, Ind., Sept. 9.—About 200 of the most prominent business men and concerns of the city have addressed a petition to the board of county commissioners, asking that the tax for highway improvements be increased from \$3.15 on each \$100 of taxales to 6.3 cents on each \$100. This is the first time in the history of the county that business interests have demanded an increase in any tax levy.

Clarence A. Kenyon, president of the Indiana Good Roads Association, has appeared before the commissioners and the county council in the interest of an increased road tax levy. He pointed out that the roads leading into Indianapolis are in a deplorable condition and that such improvements as have been made, have not been made properly. The present road levy raises about \$90,000 a year, which would be doubled under the proposed increase.

Storing Car for Winter

Directions Outlined for Preparation of Car for Cold Weather Hibernation

LITTLE ROCK, Ark.—Editor Motor Age—How should a car be stored for about 5 months in the winter time?

2—Should the lubricating oil and gasoline be drained?

3—Should the grease be drained from the transmission and differential?—Put rodny.

1—The water should be drained from the cooling system, the gasoline from tank and carburetor, the batteries disconnected, the car thoroughly oiled and all openings, such as pet cocks and oil taps closed. The wheels should all be raised from the floor, and the tires wrapped in paper or burlap, the pressure in them being reduced to just sufficient to keep them properly distended when off the floor. The bright work should be covered, and the top, if of leather or pantasote, should be dressed in oil, raised in position and preferably covered. The brakes should be released, and the metal friction surfaces oiled to prevent rust. The clutch should be engaged, and the gear set in neutral. The car should be stored in a closed dry room, preferably warmed.

2—Gasoline, yes; oil, no.

3—No.

QUERIES ON THE CUTOUT

Madison, S. D.—Editor Motor Age—Does the cutout add any power to an engine?

2—What are its advantages or disadvantages?

3—What was date of back number of Motor Age giving tests on the cutout?—W. A. Rothschild.

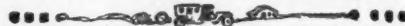
1—Yes, usually.

2—The advantages of a cut-out are that the power is usually increased slightly by the reduction of back pressure, and



The Readers

Suggestions for Storage of Machines During Cold Months— Warning as to Proportions of Acid Oxidizing Agent —Guide for Locating Overheating Causes



the sound, being more audible enables the operator to better diagnose the running of his motor, and govern his control accordingly, with the result that gear-changes are more likely to be made at the proper moment, and the likelihood of killing the motor is reduced to a minimum.

3—June 18, 1912.

PICRIC ACID PROPORTIONS

Tecumseh, Mich.—Editor Motor Age—For fear you may lose a constant reader and be confronted with an undertaker's bill, I beg to call your attention to the instructions which you gave J. C. Burns, of Minneapolis, on page 28 of your issue of Aug. 22, on the use of picric acid.

If Mr. Burns uses one ounce of picric acid and two ounces of sal ammoniac to each five ounces of gasoline in his tank, he may continue to burn for some time.—P. W. A. Fitzsimmons.

Motor Age is very grateful to Mr. Fitzsimmons for calling attention to the typographical error, which as he suggests might lead to disastrous results. The formula should read 5 gallons of gasoline instead of 5 ounces.

CAUSES OF COOLING TROUBLES

Buffalo, Okla.—Editor Motor Age—Please tell me how to stop the heating of a motor car engine. This engine heats when run about 5 or 6 miles, and boils all the water out when the water pump works good. Could the trouble be in the mag-

neto timer? If so, how do you set it? This one has marks on it. It is a low-tension Splitdorf magneto. The car in question is a model J Mitchell.—Max Schobel.

The causes of overheating are so numerous that to attempt to locate your trouble with no more particulars than are given in the above communication is guess work at best. The rule in locating the cause of trouble of this nature, however, is to go over every part of the ignition, cooling, lubrication and carburetion systems to locate any fault that could cause heating. One of the most frequent causes, perhaps, is the mistiming of the spark. The spark should be timed on a model J Mitchell in the order 1-3-4-2, with full retard on center.

It being determined that the spark is in proper time, your degree of advance in driving should be closely watched, remembering that economy and a cool engine depend upon as advanced a spark as it is possible to carry without knocking, or loss of flexibility. The adjustment of your platinum points, in both the circuit breaker and coil should be examined, remembering that the adjustment on these members should be as light as possible to avoid missing. Overheating is frequently caused by stiff vibrators, which consume a great deal of current, generate a large spark, but owing to the greatly increased volume, the speed of such a current is slow, with a resultant lag, which acts as a retarded spark.

The condition of the cylinders, both in the water jackets and the combustion chamber should next be thoroughly investigated, every vestige of carbon being removed, and sand, scale or other obstructions in the water jackets thoroughly cleaned out. The water passages should be gone over to locate any possible clogging here, as should the radiator. The pump should be examined, to see that it is working properly. The circulation may be tested by disconnecting the outlet of the engine or radiator, and introducing some aniline color, ink, or dye into the radiator. The length of time required for it to reach the outlet, and the degree of solution will indicate the speed and volume of circulation. With the engine warm, the tubes of the radiator should be felt to find if any are clogged. If so, they will be cool, even though full of water.

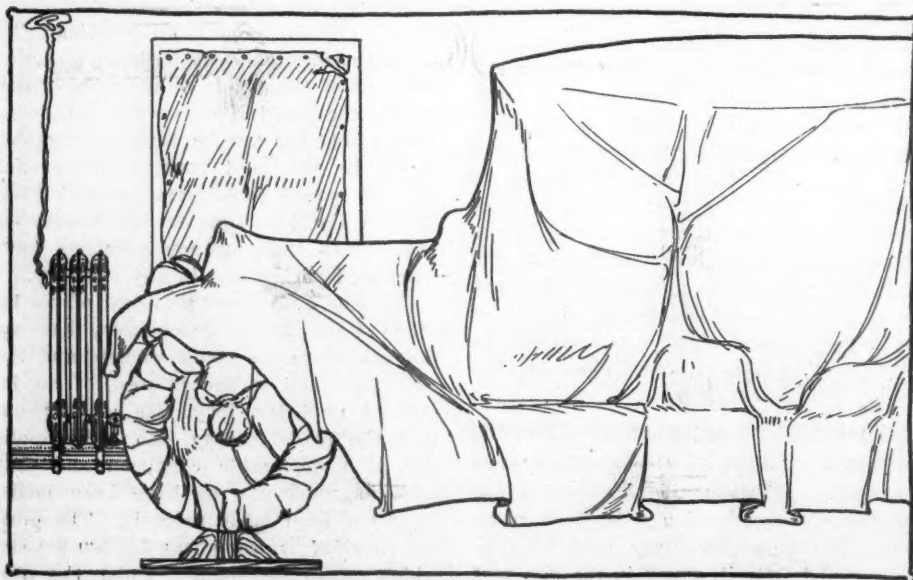


FIG. 1—IDEAL CONDITIONS FOR THE STORAGE OF A MOTOR CAR IN COLD MONTHS

Clearing House

Short Intake Passages Given Preference—Famous Racers Dissected—Tire Sizes and Weights of Chalmers 1913 Cars—Lost, a Pump Maker

It being determined that the cooling system is in good order, the lubrication should next be investigated. The condition of all bearings and of the cylinders, in respect to oiling, should be carefully investigated. Sufficient oil should be fed to the cylinders to almost smoke.

Carburetion is to be blamed last, in spite of the fact that it is a frequent offender, for the reason that most drivers find tinkering with this much abused part too easy. The adjustment of a carburetor should be very delicate and precise, and should only be changed by a man who really understands the true function of the adjustments, and has had sufficient experience to judge the results accurately. The rule, in adjusting the carburetor for cooling troubles is that overheating, if the fact can be established that it has its seat nowhere else than in the carburetor, is caused by an over-rich mixture.

MORE RACING SPECIFICATIONS

Waukomis, Okla. Editor Motor Age—What are the specifications and by what company are each of the following cars built—Jay-Eye-See, Christie, Whistling Billy and Simplex Zip.

2—What is the gear ratio of the Overland model 61 F, and how many miles per hour will it make?

3—Will a four-cylinder motor, with a bore of 4 inches and a stroke of 6 inches, develop more power than one $4\frac{1}{2}$ by $5\frac{1}{4}$?

4—Can a 35 by 5-inch tire be used on a 34 by 4-inch rim?

5—Did the Overland Company ever build six-cylinder cars?

6—What are the specifications of the eight-cylinder de Dion-Bouton?

J. H. Strickler.

1—The specifications of these cars are:

Car	Bore	Stroke	No. cyl	H. P.	Drive	Power
Jay-Eye-See	.9%	8%	4	290	Chain	Gas
Christie	7%	7	4	210	Front	Gas
Whistling Billy	5%	5%	4	90	Shaft	Steam
Simplex Zip	5%	5%	4	90	Chain	Gas

The makers are: Jay-Eye-See, assembled, with Fiat motor; Christie, Walter Christie; Whistling Billy, the White Co.; and Simplex Zip, Simplex Automobile Co.

2—The Overland 61 F is manufactured with gear ratios of $3\frac{3}{4}$ to 1 and $3\frac{1}{2}$ to 1, and is claimed to be capable of 55 miles per hour.

3—According to the modified S. A. E. rating, which takes into account the stroke and speed, a $4\frac{1}{2}$ by $5\frac{1}{4}$, four-cylinder car will develop 34.4 horsepower at

1,200 revolutions per minute, while by the standard S. A. E. formula, such a motor would rate 32.4. A 4 by 6 motor, by the improved rating would rate 30.7 horsepower at the same speed, while by the standard S. A. E. formula, it shows but 25.6.

4—Oversize tires 35 by $4\frac{1}{2}$ may be applied to 34 by 4-inch rims, but 35 by 5-inch tires must be applied to 35-inch rims.

5—The Overland company never has made a stock car with more than four cylinders.

6—Motor Age has no data on this car.

CONCERNING THE CHALMERS

North Platte, Neb.—Editor Motor Age

1—What type of steering wheel is used on the 1913 line of Chalmers cars? Is it a reversible or irreversible type?

2—What are the cylinder sizes and the actual weights of the Chalmers 30, 36 and six, five-passenger touring cars with complete equipment?—Burke Auto Co.

1—The steering wheel used on the 1913 Chalmers cars is of Circassian walnut, scalloped, 18 inches in diameter on the four-cylinder models, and 20 inches in diameter on the six. The steering gear is irreversible.

2—The cylinders on the 30 are 4 by $4\frac{1}{2}$, and on the 36 and six they are $4\frac{1}{4}$ by $5\frac{1}{4}$ inches. The weight of the 30 touring car, fully equipped, is 2,650 pounds; of the 36, 3,250, and of the six, 3,850 pounds.

Length of Intake Pipe Gas in Intake Manifold is Vaporized Rapidly; if Pipe is Long it Condenses

PRAIRIE VIEW, ILL.—Editor Motor Age—Which intake pipe will give the best gas for motor car engines, a long or short intake? In the Schebler catalog one is advised to connect the carburetor as close to the engine as possible.

2—In Motor Age, issue March 28, 1912, page 11, it is stated: "As gasoline leaves the nozzle it becomes finely divided and is carried along with the air at an increasing rate of speed until it would reach the same speed as the air or until it combines with it to form a gas." Would this gas formation take place in a short intake pipe, say 12 inches from the carburetor to the intake valve?—S. E. K.

1—Much diversity of opinion is expressed on this subject, it being generally conceded that there is a possibility of going to extremes in either direction. The prevailing preference among advanced engineers on this subject seems to be for short intake manifolds, of large diameter, and as direct and equalized passage as possible, as it has been found that long complicated passages present too much surface for radiation and possible freezing, and are apt to cause the vapor to condense.

2—Yes, this homogenizing process is very rapid, in a short capacious intake pipe, close to the heated cylinders; while in a long and narrow passage, the tendency would be to condense, thus ruining the mixture. This difference in effect may be seen in Fig. 2. About the only disadvantage in short intake pipes, properly designed, seems to be the raising of the gasoline level, impairing gravity feeds.

ADDRESS OF TIRE INFLATER WANTED

Memphis, Tenn.—Editor Motor Age—Will Motor Age, or some of its readers, give me the name and address of the maker of the Rector tire inflator?—Reader.

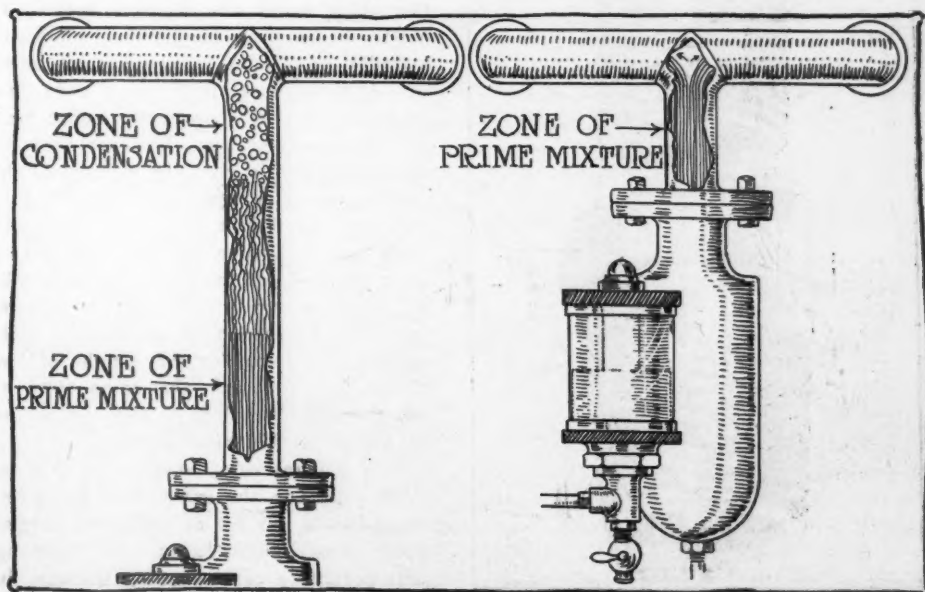


FIG. 2—HOW THE MIXTURE IS AFFECTED BY LENGTH OF INTAKE PIPE

Spark Plug Threads Merits of Shouldered and Taper- Threaded Types Set Forth and Analysed for Iown

MILFORD, Ia.—Editor Motor Age—What is the advantage or disadvantage of a $\frac{3}{8}$ by 18 A. L. A. M. threaded spark plug over a $\frac{1}{2}$ JN standard thread plug—the taper threaded? I know that the $\frac{1}{2}$ JN standard plug tightens by the thread being tapered, and the $\frac{3}{8}$ tightens by means of a copper washer at the base of the plug, but I desire to know the advantage one has over the matter.—R. E. Donaldson.

This is not a settled matter. If motorists agreed upon one type as superior to the other, the disfavored type would not be placed on the market. The adherents to the A. L. A. M. $\frac{3}{8}$ -inch threaded plug, with a gasket, claim superiority in view of the fact that owing to the cylindrical form of the threaded portion, there is no danger of cracking the cylinder, as with the tapered form by screwing in too tight. Those in favor of the tapered JN $\frac{1}{2}$ -inch thread argue, on the other hand, that the taper obviates the necessity of a gasket, insuring a tight joint at all times, and yet permitting its ready removal, when the cylinder cools, shrinking away from the plug. This makes unnecessary the tight screwing in a cold motor, necessary to secure a tight joint with a straight threaded, shouldered and gasketed type.

There can be no doubt that with the tapered thread, there is danger of carelessly screwing the plug in too tight in a cold motor, and consequent splitting of the cylinder upon its expansion when hot.

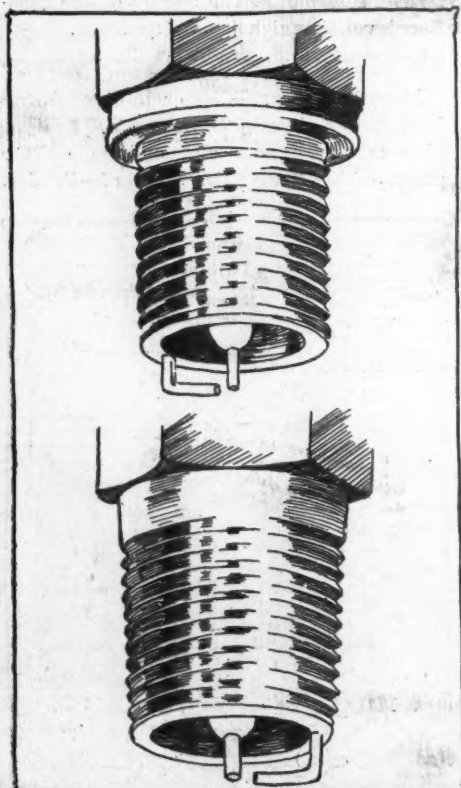


FIG. 5—STRAIGHT AND TAPERED THREAD

However, it is equally true that the tapered thread is much easier to insert, is simpler and cheaper to manufacture, automatically compensates for wear on the threads, and if properly used, is less liable to develop leaks than the gasketed type. The latter type is fool-proof, however, and makes a neater looking installation, which probably accounts for its popularity with high-priced cars.

FLYWHEEL SIZES AND WEIGHTS

Philadelphia, Pa.—Editor Motor Age—Will Motor Age kindly give a formula for the weight and size of flywheels? I have a formula for this but it does not take into consideration the number of cylinders. I should think, the greater the number of cylinders, the less weight the flywheel rim need have, until a motor has eight cylinders where no flywheel is needed except to attach the clutch to and in case of a disk clutch none would be needed. An electric motor, of course, needs no flywheel because it has an even turning torque at all points of the circumference of the armature, so that a single-cylinder motor would require the maximum.—L. F. Scheibner.

You are right in your belief that an increase in the number of cylinders lessens the necessity for a flywheel, but you are wrong in thinking an eight-cylinder motor smooth enough in action to dispense with the flywheel.

No flywheel is needed for a clutch mounting, as this member may be mounted on a light steel shell. Single cylinder motors have been put in motor cars with flywheels weighing as much as 1,200 pounds, giving them remarkably smooth action. Stationary gasoline motors are always equipped with heavy flywheels, usually far in excess of the weight actually required to pass dead center, and prevent jerks.

Stationary steam engines are likewise equipped with large and heavy flywheels, even though they have no dead center whatever, while locomotive engines on the other hand are without them. In motor car practice, the flywheel on multi-cylinder motors is reduced to as small size as possible, to still secure even running, and to pass dead center under load. It often has been urged, however, that too little attention is given by makers to the advantages of a heavy flywheel, and in their zeal for light weight, many have cut down the flexibility of their motors by using flywheels of too small size and light weight to conserve the engine's momentum under severe loads. No definite table can be laid down for the weight of flywheels, as this with the same type of motor would depend to a great extent on the design of this member itself.

As a general rule, however, it will be found that for the same results, an increase in the number of cylinders, normal speed, stroke, and balance of working parts permits a corresponding decrease in the weight and size of the flywheel.

Special Flander's Speed Californian Supplements Instruc- tions for Rebuilding Car for High Speeds

VENTURA, Cal.—Editor Motor Age—I noticed in a recent issue of Motor Age, and I again notice in the issue of July 18, discussion as to the speed ability of the Flanders 20.

My attention was first directed to the matter when a subscriber inquired with reference to securing a speed of 70 miles an hour from his Flanders, and the directions as to how the speed of his machine might be increased, lessening compression, etc. Nothing was said in these articles about increasing the gearing of the car from 4 to 1 to about $2\frac{1}{2}$ or $2\frac{3}{4}$ to 1, or about changing the timing of the valves to open the exhaust early. I would like to inquire if Motor Age believes that this car can make 70 miles an hour with standard gearing on the level and without assistance? As I figure, this would require a crankshaft speed of over 3,000 revolutions per minute, and even the highest speed motors, like the Marmon, have never claimed such a speed for their engines.

I suppose these ideas originated from the reports of the Santa Monica races last held, where the newspapers gave the Flanders credit with making laps at the rate of 70 miles per hour or better. The cars undoubtedly made this speed, but those cars were equipped with the E-M-F motors, 4 by $4\frac{1}{2}$ instead of $3\frac{1}{4}$ by $3\frac{5}{8}$ —considerable difference in size, you will admit—and because these cars were allowed to race under the term of stock Flanders, three California officers of the A. A. A. have been disqualified.

I hope that no Flanders owner has been beating his car up and down the road, after having tuned it up according to Motor Age's directions, and wondering what was the matter with the car, and why he couldn't make the speed.

The Flanders undoubtedly is a good car at the price, well built for the uses for which it is intended—an all-around serviceable car—but I do not think that through any act of omission the public should be allowed to gain the idea that these cars make 70 miles an hour without increasing the gearing and the size of the motor.—E. E. Moss.

The answer to which this correspondent refers appeared in this department of Motor Age May 16. In it, the suggestions offered by the maker for obtaining high speed were repeated. Among the suggestions, one was to advance the timing, which would open the exhaust earlier. It is certain that, without changing the gear ratio, as Mr. Moss suggests, the high engine speed necessary could not be maintained for any length of time, if it could be reached. It does not pay the amateur to attempt to rival racing cars even when the same size of motor is used.

Duryea on Compression

Defends Statements Attacked by Tismer—High Crankcase Compression Is Repudiated

EDITOR Motor Age—I have read with interest Mr. Tismer's remarks and regret that he seems to have misunderstood me in some particulars. One cannot go into details to the fullest in the space available in your columns, and so must permit one's readers to take some things for granted. I, therefore, assumed that your readers would understand that there is a distinct lag between the position of the spark lever and the actual position of the ignition; and a still further distinct lag between the occurring of the spark in the cylinder and the complete combustion of the gases. Many indicator or manograph cards show the ignition point with a second rapid rise in pressure thereafter, and by adjusting the indicator or manograph, so as to have the card moving rapidly instead of standing still, at the end of the stroke, this lag between the happening of the spark and the highest pressure point may be shown readily.

Further, engines generally are hotter when they are doing hard work than they are when running at fast speeds, also at such times the spark is not usually so far advanced, with the result that the highest pressure and heat point is after dead center rather than before. I mentioned this accepted fact simply to get a starting point from it to consider the heating of the cylinder walls. I did not intend to convey the impression that the heat of the burning charge precedes the pressure perceptibly, for I do not know that such is the case. We know that the heat is the cause of the pressure and we know that a perceptible and measureable time elapses between the spark and the completion of the combustion which marks the high point of heat production, but our most ready means of knowing that heat has been produced is by the pressure it produces, so I have assumed that the two were synchronous. Mr. Tismer bears out my contention by stating that maximum pressure does not come coincidentally with the smallest volume. If it came before, the additional compression would probably carry the pressure higher, so his remark, I understand to mean that he has noted higher pressure and presumably higher heats after dead center, in which belief he is undoubtedly right.

Regarding "a real good pump," Mr. Tismer certainly knows that for handling gases, a real good pump should have as little clearance as possible. The four-cycle has a large compression chamber and as a result, part of its pumping effect is expended in stretching out the contents of this chamber on the suction stroke and compressing into this chamber on the exhaust stroke, followed by some expansion and more stretching out on the next suc-

tion stroke. The crank case of the two-cycle engine is certainly a less efficient pump, both for suction and exhaust, than the cylinder of the four-cycle, for the reason above stated, and neither of these pumps will anywhere nearly approach 100 per cent volumetric efficiency except at practically stand-still speeds. Good authorities say that at moderately high speeds the average four-cycle does not get more than half charges and it is certain the two-cycle gets less. If Mr. Tismer has an engine which can fill the cylinder with fuel, he has what the ordinary two and four-cycle engines do not have.

I further admit that I would not care to undertake to produce an engine of the two-cycle type, having an ability to give 50 pounds compression in the crank case, for this would mean that the total clearance space would need to be reduced below one-third the piston displacement volume, and would require filling the piston, crankcase and even the connecting rod, with a lot of useless material. I say useless, because there is no advantage in a high crankcase compression. If suitable transfer passages are provided, the charge will get from the crankcase into the cylinder without need for a high crankcase pressure, which is negative work, and largely wasted when the charge is transferred. I prefer to keep this negative work as low as possible. The two-cycle only needs to be made somewhat larger than the four-cycle for twice the maximum power, and when it is so made it will give more than twice the power of the four-cycle at moderate speeds, and thus largely avoid any need for changing gears. It is an excellent engine for heavy work, and this is one reason why it is used for boat service, where it is subject to hard, steady pulling from start to stop.

I abandoned hot tubes for automobile work twenty years ago, because I then took up throttled motor car engines, and the hot tube does not fire regularly unless the compressions and mixtures are regular. The two-cycle surpasses the four-cycle for hot-tube work, because it always has constant compression and will force the charge into the tube the same distance each time. I can, therefore, see considerable advantage in the hot tube for two-cycle work, because it will fire any kind of a mixture and probably the variations due to the quality of the mixture would not be such as to seriously interfere with the ignition time. But with the four-cycle, the varying compressions due to throttling often resulted in misfiring. If Mr. Tismer will send his address I may be of some assistance to him in the matter of lubricating his hot engine. I am a thorough believer in utilizing heat for power instead of for boiling useless water, and have spent considerable time finding an oil which is of higher fire test, and, therefore, better adapted to lubricating hot engines than most oils on the market.—Chas. E. Duryea.

Differential Discussion

Motorist Understands Function of Equalizer, but Is Hazy on Structure and Operation

NEW YORK—Editor Motor Age—Will you please illustrate and describe the action of the differential gear of a motor car. I understand that this device is to drive both rear wheels, yet allowing them to revolve at different speeds when rounding curves. If this is true, are not the differential gears of racing cars in continual action, and does this not involve a considerable extent of frictional loss?—O. L. H.

In Fig. 4 is shown the bevel gear type of differential, which is the simplest and most popular. The assembly complete as shown, consists of the bevel driving pinion, the driven bevel gear, and the differential. The driven gear is in the form of a ring, having four internal radial pins within it, upon which are four small bevel pinions, perpendicular to its axis and the axes of each other. These mesh on opposite sides with bevel gears secured to the inner ends of the divided and independent driving axles. When the wheels revolve at equal speeds, i. e., when the road resistance on each is balanced, the differential is inoperative, except as a clutch. Upon the unbalancing of the torque on the wheels, the bevels turn, causing one shaft to revolve faster than the driven gear, and the other slower in inverse ratio. This preserves the average speed of the two wheels at the same, regardless of the differential action. Your observation regarding differentials in racing cars is correct.

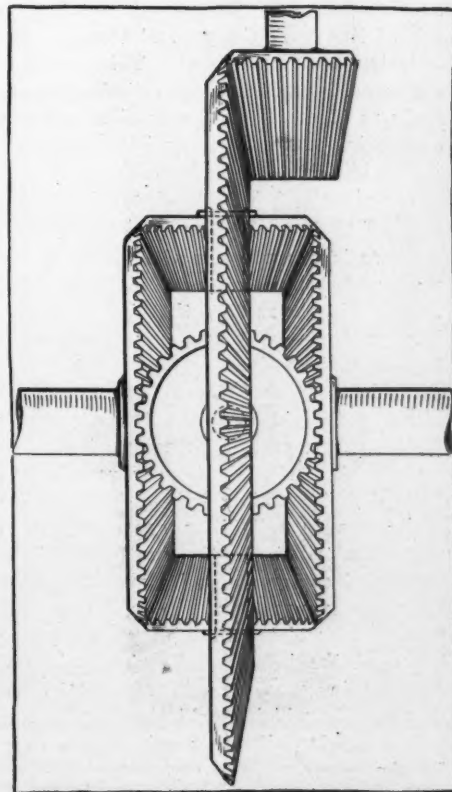


FIG. 4—PLAN OF DIFFERENTIAL

The Premier Little Six Makes Its Debut



FIG. 1—PREMIER LITTLE SIX TOURING CAR SHOWING CLEAN LINES

The left-hand drive, bull's-eye port dash lamps and deep cowl are indicated. This shows the left-hand drive as well

WITH the introduction to the motoring public of the Premier Little Six comes the announcement that the Premier Motor Mfg. Co. will devote its attention solely to six-cylinder cars. The announcement that this company will build sixes exclusively in the season of 1913 does not come as a surprise, in view of the general tendency among makers of high-grade cars, nor is the decision to put out a six-cylinder car of smaller size than the present Premier six out of line with the general trend of the industry at the moment. This company commenced marketing six-cylinder cars as early as 1907, only a few at that time; in succeeding years the demand from the buying public has determined the ratio between sixes and fours built, until now the six has crowded the four out completely.

There is one point in the policy of the maker of the Premier as shown in the details of construction that is worth noting particularly before a description of the cars themselves is attempted. This point is the thoroughness with which the plans were laid to make the car easily kept by the owner in proper working condition. A study of the car reveals the fact that its maker has profited by its experience in reliability contests and is as well a tribute to the worth of rigidly conducted contests of this sort. The Premier concern was one of the early supporters of strict reliability contests and has used the information gained in such contests in guarding against weaknesses of assembly which would show up in use and in making all minor adjustments easy for the owner.

This care is illustrated in the fact that

practically every nut, bolt and screw throughout the car is permanently locked so that it is impossible for it to jar loose, the maker going on the very excellent theory that if it is important that a bar or bolt be carefully adjusted, it is also important that provision be made that this adjustment will be maintained. This is shown, as well, in the fact that all permanently connected gears are integral with their shafts, instead of sacrificing the narrow margin of metal at the base of the gear to cut a key-way and thus localize the entire pull and strain at

one point. In only one point throughout the car is there a key holding a revolving part and this is in the sliding gear for the air compressor pump where a moveable connection is required. There is still another point in which this attention towards easy maintenance is well illustrated and that is that on spring ends and all points where brake rods or other rods pass through the frame there are removable bronze bushings easily replaceable in case of wear.

With this aim of easy maintenance in mind let us look at the cars themselves.

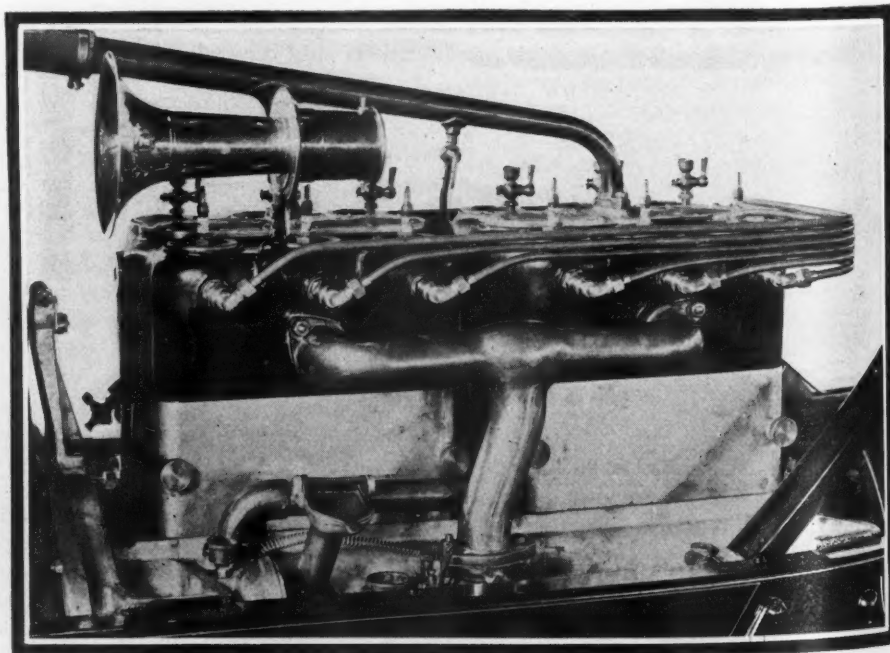


FIG. 2—INTAKE SIDE PREMIER LITTLE SIX MOTOR

Showing triple casting of cylinders, leads for compressed air starter and position of electric horn

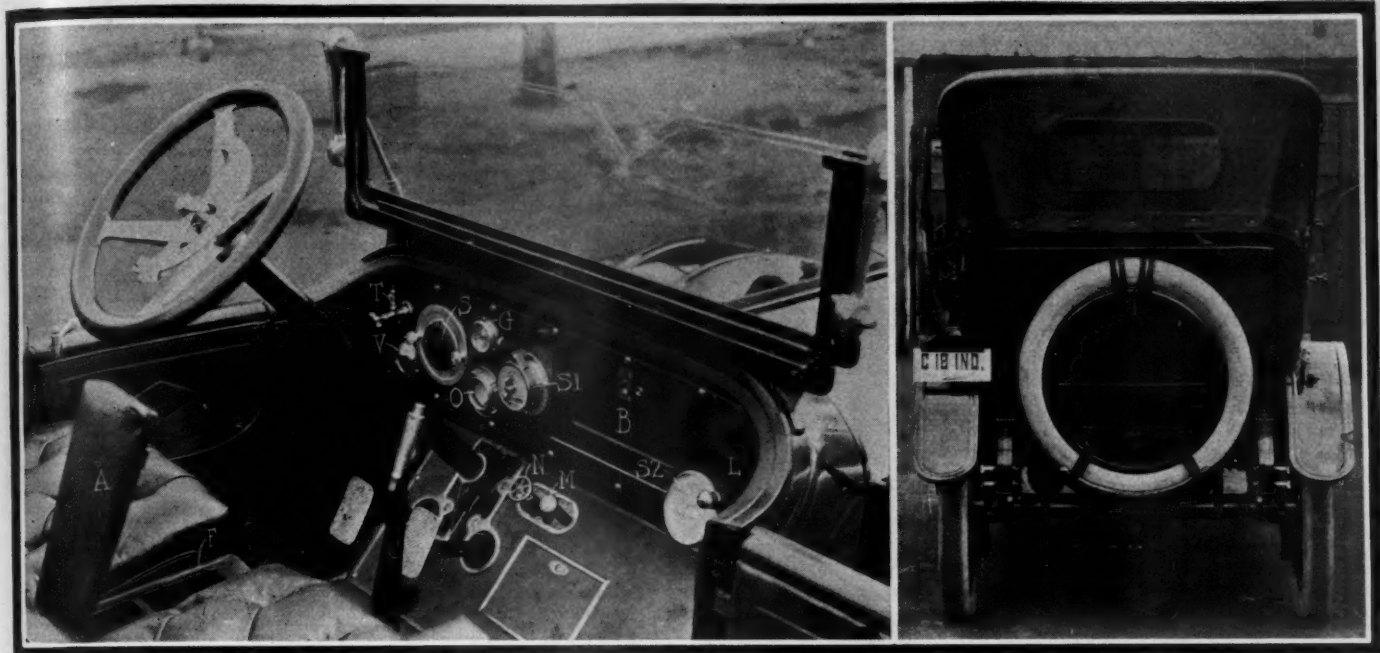


FIG. 3—SOME BODY FEATURES OF NEW PREMIER LITTLE SIX

The view of the forward compartment shows a commendable detail in the location of the fuel tank filler *F* between the two seats. To fill, the arm rest *A* is raised and the funnel inserted. On the dash at the extreme left is the hose connection *T* to the air tank for tire inflation. The rear view of the car illustrates the spare tire carrier and the electric taillight and number holder. *N* is a night shut-off for the air system.

Premier cars for 1913 will appear in two models, both of them six-cylinder and known for the coming year as the Big Six and the Little Six. The Big Six car is the same car as was marketed as the model M-6 in 1912, with its motor of $4\frac{1}{2}$ by $5\frac{1}{4}$ inches bore and stroke and its cylinders cast in pairs. The only change of importance in the Big Six over this year's construction is in the steering rod connections which, instead of the ball joint used previously, will be a universal joint arrangement which will be described in more detail below. The Little Six is a new model differing only in its motor size and arrangement and in chassis dimensions.

The general design of Premier cars embraces a two-unit power plant consisting of a T-head six-cylinder motor and multiple disk clutch as one unit, and a three-speed sliding gearset as the other unit; a three-quarter floating axle and an I-beam front axle and heavy channel frame.

The motor of the Little Six has cylinders 4 inches in diameter by 5 inches stroke and practically the same construction is used as in the Big Six except that with a smaller bore of cylinder three cylinders can be combined in a unit so that the cylinders are cast in triplets. This permits placing the three cylinders close together, making a minimum distance between end bearings and center bearings. With these bearings it is not difficult to maintain rigid alignment of the crankshaft. As with the Premiers of the past the cylinders are cast with a large opening in the top of the water jacket which is covered with a light aluminum plate. The reason for such an arrangement is that it makes the foundry work more uniform so that the thickness of the cylinder and jacket walls would be the same throughout. This also makes possible the re-

moving of lime deposits which may accumulate from the water circulation and the makers have found that this light plate will, as a rule, give way when the motor is allowed to freeze up and will thus save the cylinder. After being cast the cylinders are pickled to remove core sand, then rough machined, heat treated to relieve the tension of the outside scale, bored, enameled and finally ground. The bore is said to be accurate to within .0005 inch. The pistons are of gray iron and the clearance between piston and cylinder is .003 inch. Each piston is fitted with three rings which are individual castings to give increased spring and life. The connecting rods are I-section drop forgings with

large bearings, the crankshaft is machined from solid drop forgings. The engine base is made of a close-grained semi-steel said to correspond to that used by the government in army coast defense mortars.

Lubrication of the motor is a circulating system with constant level splash, maintained by a gear-driven gear pump. There is a sight-feed glass on the dash, indicated at *O* in Fig. 3. In the lower half of the crankcase are molded transverse troughs. These have partitions between them so that the dippers on the ends of the connecting rods dip into oil on any grade below 27 per cent. The oil which overflows from the troughs drains into the reservoir in the rear and again is

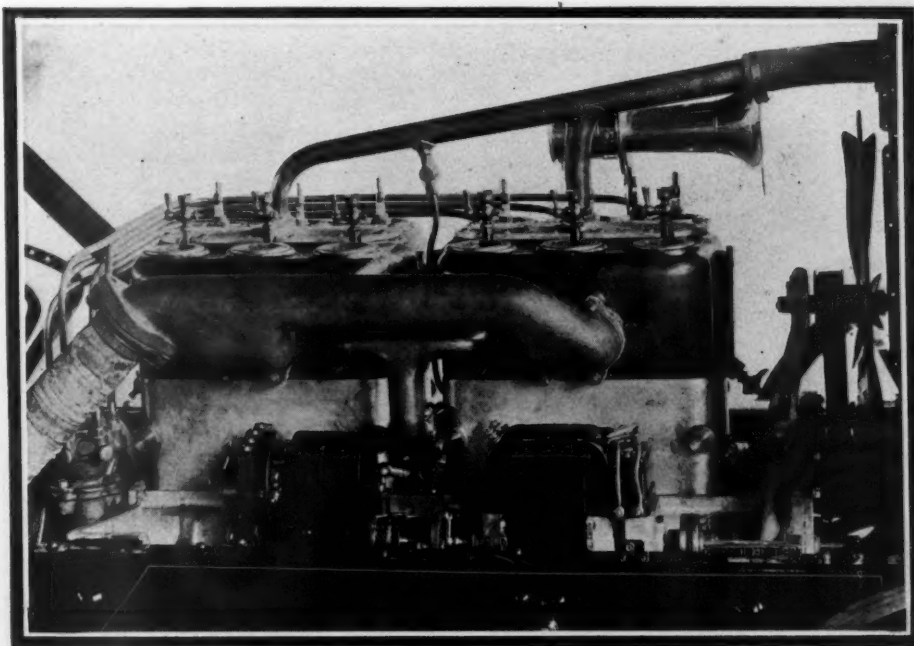


FIG. 4—EXHAUST SIDE PREMIER LITTLE SIX MOTOR

Illustrating location of magneto and lighting generator as well as air distributor at the rear

forced back into the troughs. To the lower end of the connecting rods are screwed tubes which dip into the trough and throw the lubricant up into the cylinders. The oil is supplied through a filler pipe and breather in one arm of the crankcase and its height can be judged by a petcock in the side. Pockets in the bearing journals catch the oil and feed it direct to the bearings through oil holes.

The valves are completely enclosed and the push rods have rollers 1 inch in diameter which are ground inside and out. The push rod guides are die-cast bearing metal and are held in place by a forked clamp which when loosened permits two of them to be removed at once.

The cooling of the motor is by means of a gear-driven centrifugal pump and honeycomb radiator. The water is introduced at the lowest point of the waterjacket and comes out at the highest point. The pump is provided with a space on the outside of the plate so that if the pump were to become disabled the superheated water would rise and the circulation would continue in a reasonably satisfactory manner. In other words, it is a combination pump and thermo-syphon system. In addition to the radiator there is a fan immediately behind it which is driven by a belt from a pulley on the end of the pump shaft. Blade spokes on the flywheel act as an exhaust fan. The support of the radiator is unique in that it is rigidly fastened to the frame on the right side while on the left side it is mounted on a trunnion B, Fig. 11, to protect it from strains.

Ignition is obtained by an Eisemann magneto driven from the pump shaft in the case of the Big Six and on the right side on a special gear in the case of the Little Six. On this shaft also is the magneto-type electric generator which provides current for the electric lights. The lighting system consists of a ball-bearing Remy magneto generator and a battery

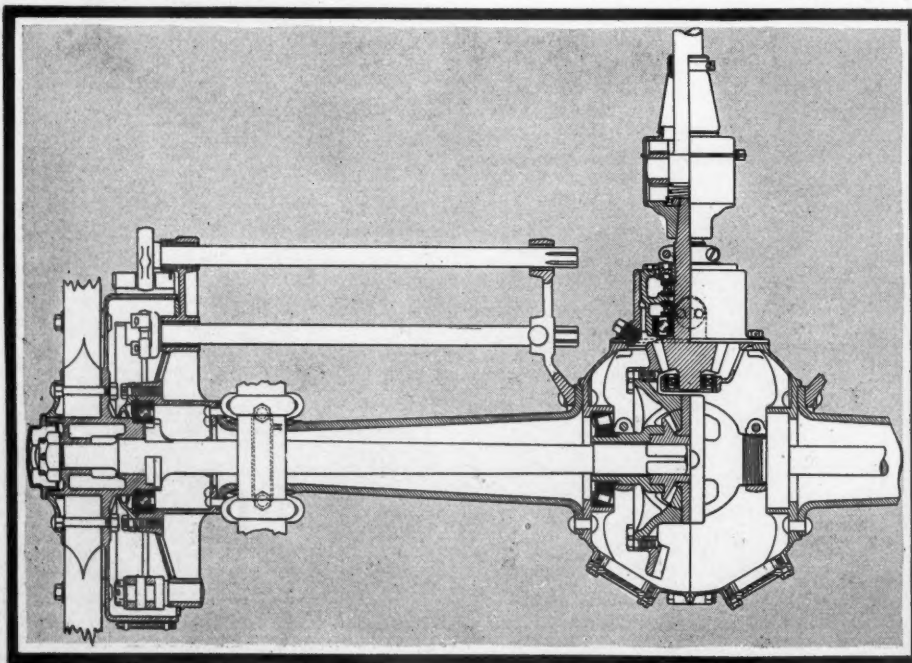


FIG. 5—PREMIER THREE-QUARTER-FLOATING REAR AXLE CONSTRUCTION

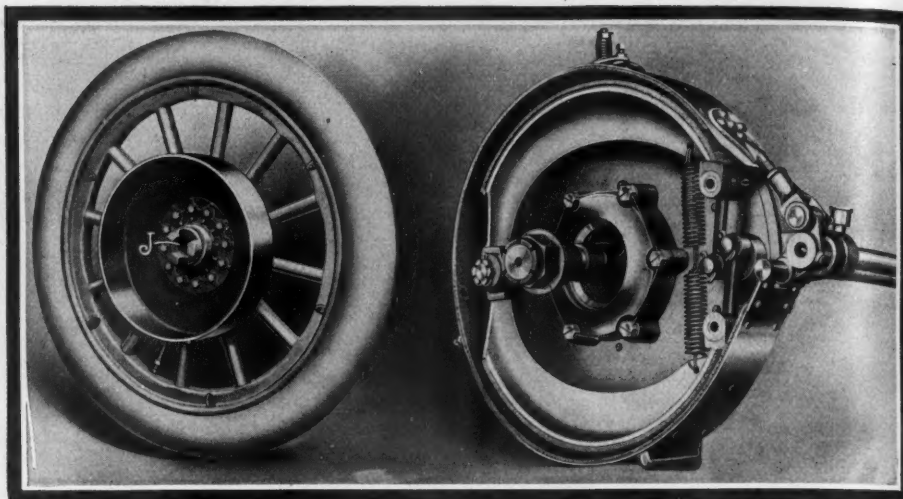


FIG. 6—BRAKE CONSTRUCTION ON PREMIER CARS

The jaw clutch connecting hub and driving shafts in the axle with the wheel is shown at J

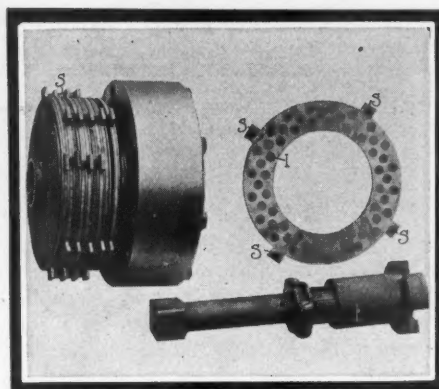


FIG. 7—THE MULTIPLE-DISK CLUTCH

floating on the line. The generator delivers current at a pressure of 12 volts to a 3-wire circuit so that 6-volt lamps are used. The system is designed to carry 68 candlepower of lighting load on the generator at a speed of 8 miles per hour.

Premier cars are made self-starting by

means of a compressed-air system consisting of a small pump on the gearset countershaft and a storage tank and lastly a distributor feeding to six ball-check valves, one in each cylinder. On pressure on a valve at the top of the starting switch S1, Fig. 3, in the driver's compartment air is admitted through the distributor to the cylinders in the order of firing so that the pressure forces the pistons down until the motor takes up its regular cycle. The pump is a single cylinder with air-cooling flanges and has a bore of 1 5/8 inch and stroke of 2 1/4 inches. There is an air gauge shown at G in Fig. 3 and a pressure of 50 lbs. is sufficient to turn the motor over for starting.

The clutch is multiple disk running in oil. It has twenty-one plates, the alternate ones having cork inserts to prevent gripping. These are shown at I in Fig. 7. The plates have four lugs extending from their circumference and on these are attached small coil springs S to facilitate disengagement of the clutch. To make easy the removal of the clutch, the shaft between it and the gearset telescopes when a collar is released.

The three-speed gearset is in an oil-tight aluminum housing which has four arms attaching it to the subframe. The gears are cut from nickel-steel drop forgings and the shafts run upon five annular ball bearings. The entire power plant is mounted upon a subframe of channel form which is bolted to the main frame in such a way that it forms a complete box frame for the forward portion of the chassis. The gearset control, Fig. 9, is mounted immediately over the gearset housing so that the lever is in the center of the driver's compartment as shown in Fig. 3.

Power is delivered from the gearset to the rear axle by shaft equipped with two combination slip and universal joints packed in grease. The universal joints embody a feature of Premier construction at the ends of the propeller shaft. These are tapered squares which fit into tapered square holes in the universal joints in order to do away with keys and key-ways.

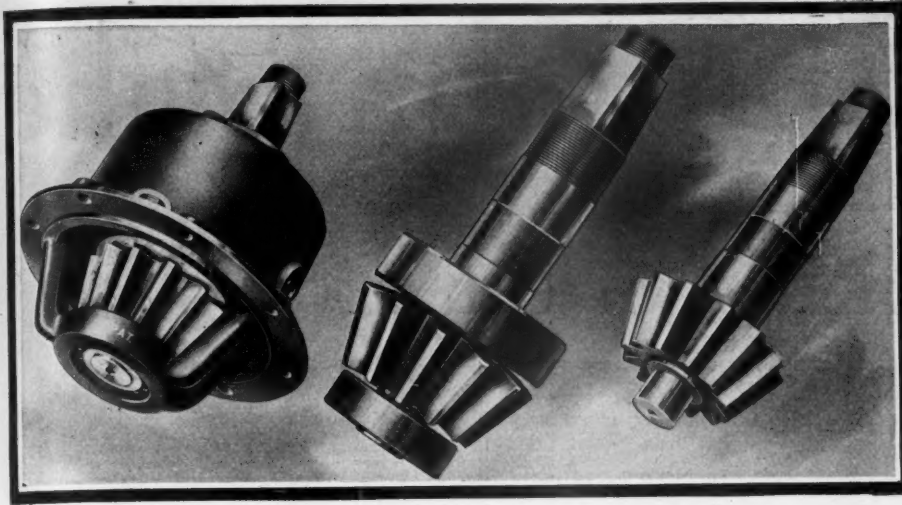


FIG. 8—PREMIER DRIVING PINION AND ASSEMBLY
Showing integral gears and shafts with square tapered ends instead of keyways

The torsion rod is of the V type of tubular construction and the front end is retained in a spring cushion ball joint.

The rear axle is a Premier patent and is what may be called a three-quarter floating type. It has an internally ribbed center housing so that truss rods are dispensed with. The differential is of the bevel gear type and upon it is mounted the main driving gear. Through hand holes in the rear of the housing the gear may be adjusted laterally to take up wear. Correspondingly, the pinion which transmits the rotary motion of the driving shaft to the axle gear is adjustable longitudinally so that with these two adjustments the gear can be made to mesh properly should it be necessary to change their setting. There are eight anti-friction bearings in the rear axle; roller thrust bearings on either side of the differential, annular bearings at the outer end of the axle shaft, and four bearings in connection with the pinion.

At the ends of the axle housings are the brake supports rigidly attached and hot riveted. The brake drums are integral parts of the wheel hubs. The live axle shafts are square at the inner end to fit into the differential and at the outer ends are provided with three clutch jaws forged integral with the shafts themselves. These engage with three corresponding clutch jaws in the hubs of the wheels through which the drive is transmitted. The brake drum is an integral part of this clutch and hub arrangement and the wheel is bolted to it with a bolt through each spoke. An annular ball bearing is placed in the load-carrying center of each wheel.

Braking surface on the Premier car represents a total of 526 square inches and the fact that the brake drums are integral with the wheel hub makes the braking action positive. The internal brakes are operated by a foot pedal and are steel bands covered with raybestos. The emergency brakes are external and are of the same construction. Full adjustment of both brakes can be made by

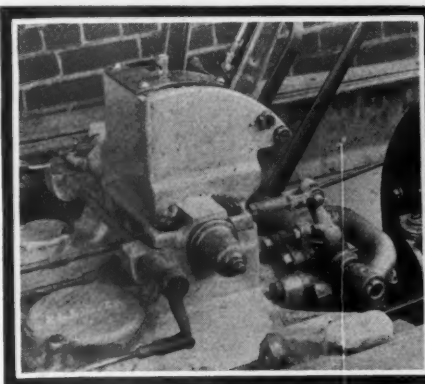


FIG. 9—CENTER GEARSHIFT CONTROL

lifting a floor board under the driver's feet, which gives access to a turnbuckle on the brake rod. Additional adjustment is provided by a takeup on the rear end of the rod without removing the brake.

Semi-elliptic springs are used on the front, each 36 inches long, and three-quarters elliptic on the rear with the bottom section 50 inches long and the top 26 inches in length. The forward ends of the lower leaves of the half springs at the rear, Fig. 10, are longer than the others

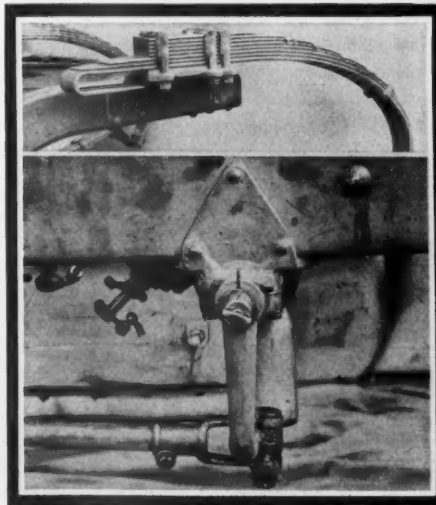


FIG. 10—REAR SPRING ATTACHMENT

and are curved under to cushion the blow if the spring strikes the rubber bumper. The front springs in addition to being held by spring clips have drop forged plates binding the leaves at the center. The rear front springs in addition to being held by spring clips have drop forged plates binding the leaves at the center. The rear corners of the channel frame are braced by pressed steel channel sections and small gusset plates. At the front there are integral gusset plates extending down to the radiator supports.

Premier steering gears are unique in one or two respects. In the knuckle design, the load carrying center has been brought close to a center line through the king bolt constituting the steering center. Truss bearings are used in the top of the king bolt to carry the vertical load and the bottom held in hardened and ground bushings. New this year is the ball connection between the tie rod and the steering arm. This is illustrated at A in Fig. 11. The gear is of the irreversible type with a full gear and worm. This gear travels less than one-quarter of its circumference in any one position of adjustment and in case of wear can be shifted one-quarter of a turn. A further adjustment is provided between the worm and the gear by an eccentric bronze bushing.

Notable among the features of the Premier 1913 cars is the clean appearance of the body. Tool boxes, battery boxes and similar equipment being removed from the running board. A mahogany cabinet in the deep cowl of the dash has been provided for carrying tools; the battery is suspended in the front of the car and the spare tire carried at the rear. The bodies are straight line and the door hinges are concealed. The upholstery is unusually deep, the seat springs consisting of a double row of coils, one above the other, with a wire partition between the two.

One of the most commendable features of the equipment is the arrangement for filling the gasoline tank illustrated in Fig. 3. The wheelbase of the Little Six is 132 inches and that of the Big Six is 140 inches.

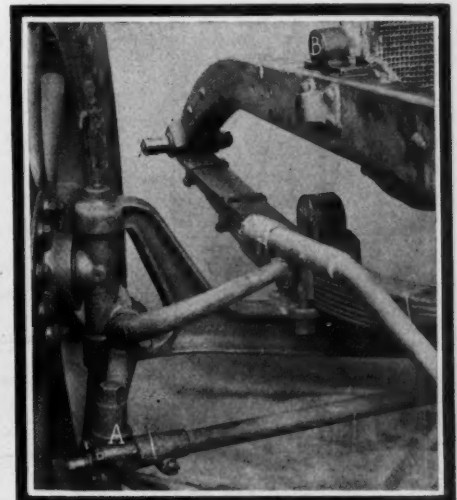
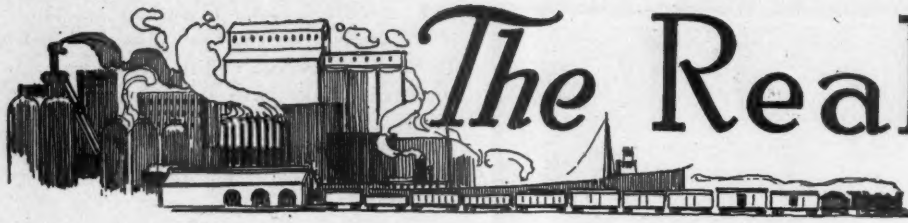


FIG. 11—BALL-JOINTED TIE ROD



The Realm of the

Idle Motor Minutes Mean Lost Miles

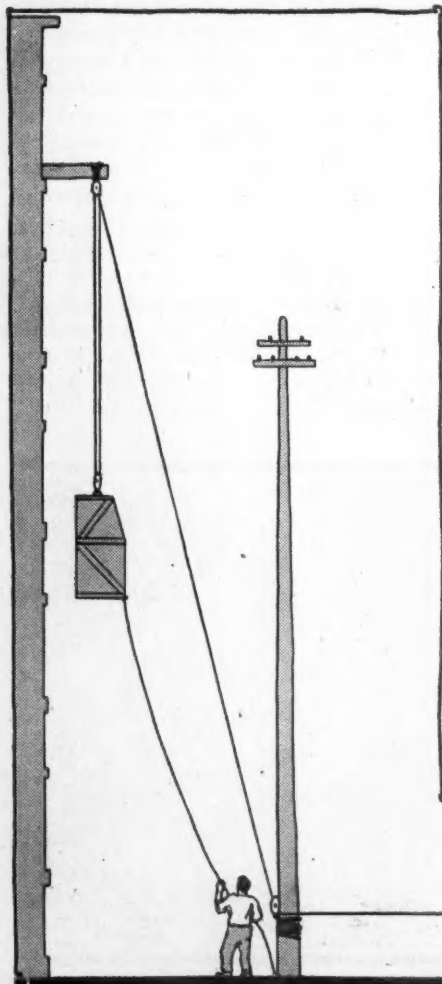
No Need Hurrying Horse but With Power Rig Its Different Matter

THE horse demands so many idle minutes per day. With a motor truck idle minutes mean lost miles. There is little need for hurry in using horses for delivery work.

With motor trucks the success of the machine depends directly upon the percentage of running or working minutes during which it operates during the day.

As a general proposition one may say that it costs twice as much to run a motor truck for a day as it does a team of the same capacity. If this be so the motor truck must give twice the service of a horse outfit to be a paying proposition.

The curves plotted in Fig. 1 show the direct relation of idle time to service in



PIANO HOISTED BY POWER FURNISHED BY TRUCK

TO be a true prophet is no easy task.

When the first railway was built it was intended primarily for freight, it being by no means the intention of the corporation building it that the line would in any way interfere with passenger traffic by road. The line was to be public and it was the idea that anyone by paying toll might draw his wagons over it as he would over a road. The first operation of the line with steam as the hauling medium, however, put the horse out of business forever so far as railroading is concerned and made the directors almost forget their freight idea in the rush of passenger traffic which came.

The first motor truck was built no doubt with no intention of its doing anything but to take the place of a horsed wagon in some line of business, but at the first operation it was seen that this new vehicle was something more than had been intended by the designer, a vehicle which would do things he never dreamed of and operate to reorganize all hauling methods in local work as the railroad had in inter-city work.

With the adoption of motor trucks by any firm and the expenditure of a reasonable amount of brains in fitting the business to their work the horse is doomed for that firm for all time. True, for a while, due to present horse conditions, horses will stay for limited work, but as horses grow less the influence of the truck will change these conditions until no firm can afford to use horses even in near work and with many stops.

As the machine left the horse behind in railway freight hauling, so will it also in road hauling. Straws tell which way the wind blows.

both horse and motor systems of delivery, based on a cost per day of \$5 for the horses and \$10 for the motor wagon. The horizontal line below is marked from 1 to 70, representing the miles of travel possible per day, the vertical distances are marked from 0 to \$2, representing the cost per mile. The number of miles done per day determines of course the cost per mile, on the figures taken.

If the horse outfit does 5 miles a day for \$5 cost, it takes \$1 to pay the hauling cost of every mile, as shown at the upper, X, on the horse plot. If 10 miles a day are made the cost is 50 cents per mile. The maximum is reached with horses at 15 miles per day, bringing the minimum horse cost per mile to about 35 cents. Connecting these points makes the curve ending at maximum.

The other curve represents the motor truck cost. If the machine does but 5 miles a day the cost of hauling is double that of horses or \$2 per mile. Doing 10 miles a day the horse is still cheaper. At 15 miles a day the motor is still at a disadvantage, not having begun to make a showing against the horse at the point where horse delivery is at a maximum.

The truck must make 30 miles a day before it will equal the best horse cost of 35 cents per mile. At the same time it must be remembered that the truck at this point is doing twice the mileage or the work of two teams.

The average motor truck which is paying dividends makes around 40 miles per day, which on the table shows a cost of 25 cents per mile. This is a little low, as for distances beyond the 30-mile point extras will begin to work in on the \$10 a day flat rate in the shape of tire wear and replacements to bring the daily cost up 2 or 3 cents per mile. The figures given on the plot, as noted before, are for the flat \$10 a day rate.

Beyond the 40-mile mark the cost per mile does not decrease so rapidly but approaches a limit at a decreasing rate. The curves show, however, that to do its best work and pay for itself in money saved a motor vehicle must make twice the mileage of a horse rig in the same service.

The somewhat similar curve of Fig. 2 shows the cost per ton as related to the loads carried per day with both horses and trucks on the same cost basis. The 3-ton load is taken as a unit.

Hauling one load a day the horse cost

Commercial Car



Piano Business Favors the Motor Truck

Nearly Every Musical House in Chicago Uses Power Vehicles

PRACTICALLY the entire piano business of Chicago is handled by motor trucks. Motor vehicles in this service are saving the firms using them from \$20 to \$25 per day. Most of the hauling is done under contract by haulage firms but all find the motor truck much cheaper than the horse. Horses in this work were used originally but 2 days out of 3 with a rest day between, and made around 20 miles a day.

Motor trucks work every day, 8 to 10 hours per day and cover 50 to 75 miles per day. In 1 day's work a machine for Steger Brothers covered over 100 miles. Four men are carried to a truck whether horse or motor, so the saving of the motor truck which will make two or three times the number of deliveries per day with the same quota of men required on a horse rig is apparent. Chicago piano dealers are thoroughly convinced of the practicability and success of motor trucks in piano hauling.

Starting some 7 years ago Lyon & Healy have delivered pianos to date by

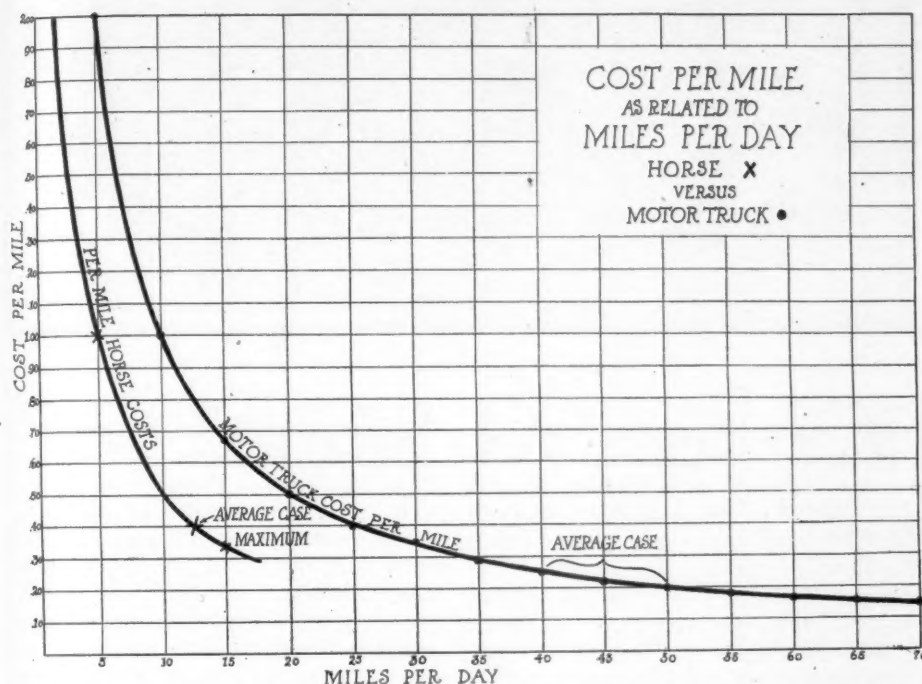


FIG. 1—HOW KEEPING THE MOTOR TRUCK MOVING REDUCES THE COST PER MILE

per ton is \$1.67. The motor truck must haul two loads to make this showing, again being required to do twice the work of the horses to pay. The maximum number of horse loads on a 1-mile trip is given as six, making a cost per ton of 83 cents, the limit being imposed by the maximum horse mileage possible.

The truck making twelve loads per day would bring the cost to the same figure, making twice the mileage at the same time, however, so that the truck would in this case be doing the work of four teams. However, on a 1-mile haul such as the horse outfit was credited with, it is doubtful if a motor truck could be made to haul more than six loads, the same as horses, unless special loading and unloading devices were used. The superiority of the truck would be shown more on longer hauls. Suppose the haul were 3 miles. The horse maximum would then be say 3 trips a day or 9 tons. Cost, 56 cents per ton. Loading and unloading time, 20 minutes. The motor truck could make a trip an hour, or nine trips in a day, carrying 27 tons at a cost of but 37 cents per ton. It is on the long haul that motor trucks make the best showing.

At the same time there is here an indication of the cost of waste time at loading and unloading. Suppose it took 1 hour

to load and unload the truck; 1 hour and 40 minutes for a trip. But six trips could be made in a 10-hour day, bringing the cost per ton up to 54 cents per ton.

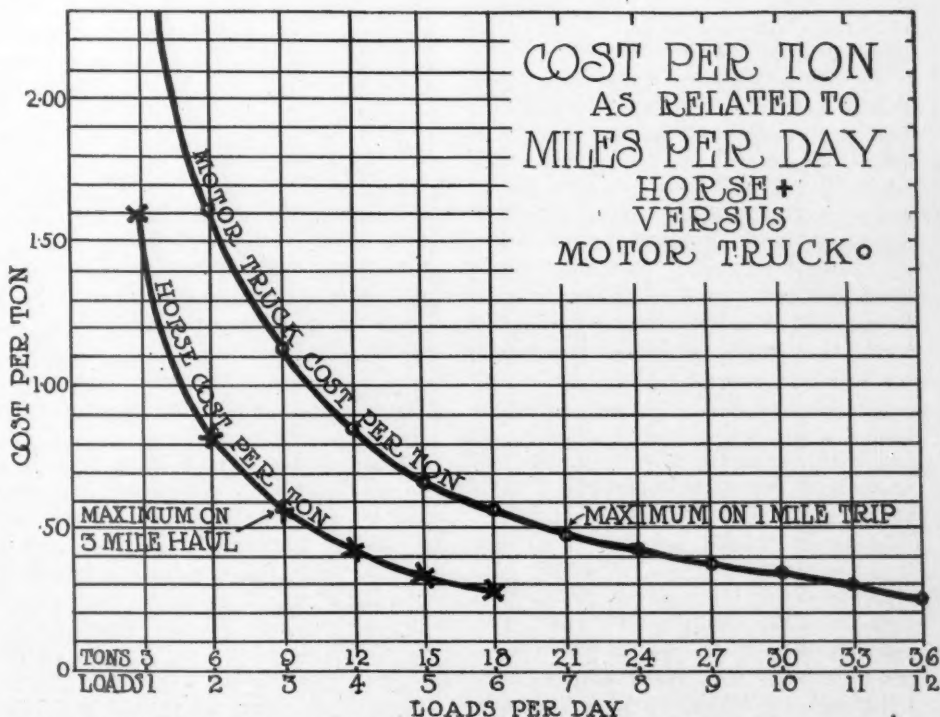
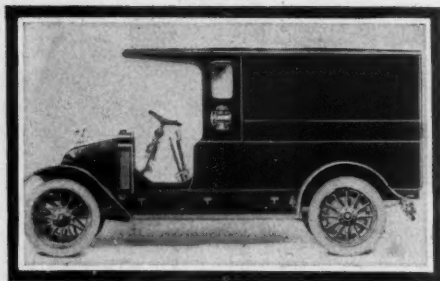


FIG. 2—SHOWING HOW ELIMINATION OF IDLE TIME REDUCES COST PER TON OF MOTOR TRUCK HAULING



STEWART LIGHT DELIVERY

motor truck at a saving of some \$25 per day. The Cable Piano Co. also and the Kimball Piano Co. are delivering their own product by motor truck, and with great success. Lyon & Healy have six machines in use in all—three 3-ton trucks, one 2-ton and two 1-ton machines. The 3-ton machines make on an average 50 miles a day with twelve to thirty stops. The smaller trucks make 60 to 70 miles a day with forty to seventy-five stops.

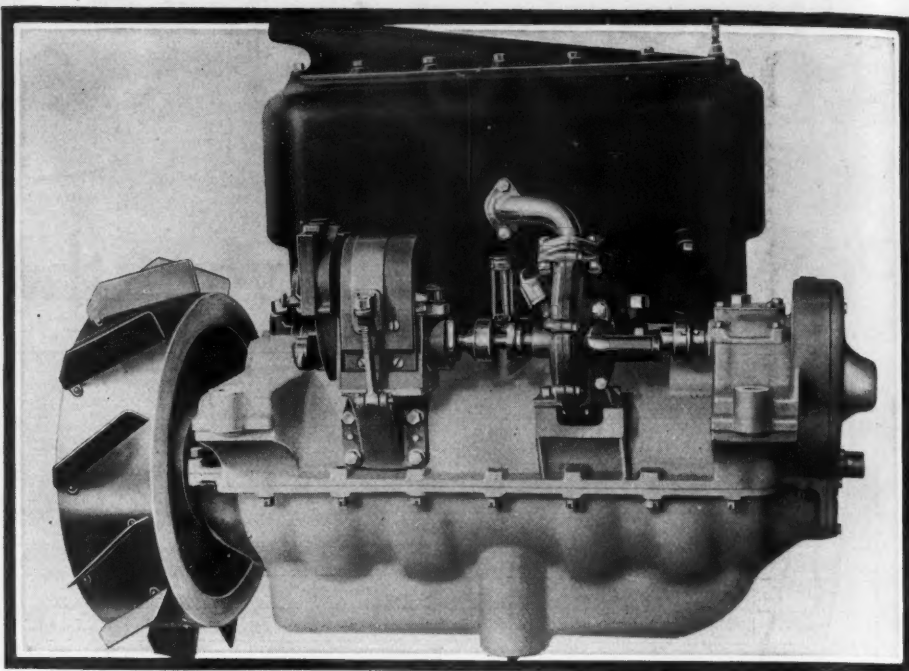
The large trucks are used for the piano hauling and in this branch takes the place of six to eight horses. The cars are fitted with governors to hold the speed down to a 14-mile maximum speed. Piano hauls are ordinarily long and loads heavy so that horses are changed off from day to day. Three horses are used to a wagon, or were with this firm, one horse resting each day and two working.

Four men are taken to a wagon which with horse rigs meant an expense per vehicle of about \$15. The motor truck at an expense of \$20 per day taking the place of three horse rigs saves as stated before about \$25 per day for this one firm. About 8,000 pianos are moved a year. Men on loads are paid \$3 per day. Cars run from 7 a. m. to 7 p. m. and are garaged at the company's factory 2 miles out from the downtown store, thus allowing an early start in the morning with a load.

The Cable Piano Co. has three motor trucks in operation, running 40 miles per day and making in that time from twelve to twenty-two stops. The trucks show a saving of at least 50 per cent over horse delivery. Four men go to a truck, the driver at \$25 per week and the helpers at \$23. Cars make 20 miles per hour speed. Machines are of 2 tons capacity. When horses were used four horses were allowed to a wagon, each team being used on alternate days.

The Kimball Piano Co. uses two 2-ton trucks, making an average of 55 miles per day with twenty to fifty stops. On one occasion 95 miles was covered in a day's work.

Loads are variable and there is no routing in any of the piano work. Four pianos make a load, and as before four men are taken to a truck. The trucks make speeds of between 15 to 20 miles per hour. The two trucks have replaced eight teams. Four horses were originally allowed to every piano wagon, changed every other day, but now all piano haul-



RIGHT OR INTAKE SIDE OF STEWART MOTOR

ing is done by motor, and with a resultant saving of 40 per cent. The average haul is 4 miles, but trips are made to West Pullman, Gary, Chicago Heights and South Chicago, a distance of about 15 miles each way, three times a week. The cost of operation is about \$21 per day per truck against a former cost of \$16 for horse wagons.

An interesting item in regard to all of these firms is that of tire expense. With the Cable company a tire never has lived up to guarantee, 4,000 miles being the average. The company claims a speed for the truck of 20 miles per hour average. With the Kimball company tires last 5,000 miles to the guarantee, never over that. Speed is given at 14 to 20 miles per hour. Lyon & Healy have no trouble with tires, all of them living up to guarantee and some away over. Their cars are limited in speed by governors to 12 to 14 miles per hour. Is not the reason for tire wear shown in the speed item?

Noting the result of piano hauling by firms purchasing motor trucks, others have taken to the idea. The Steger company, for instance, has a motor truck working which is taking the place of three teams. It averages 50 miles per day and has done 105 miles in a day. Stops are not so frequent being from eight to ten. The truck costs about \$20 per day, horse rigs \$16.

Going a step further than this is a company recently formed which has taken over the piano delivery work of the bulk of Chicago downtown piano firms and it may be with the eventual intention of handling all of it, as the delivery superintendent of one of the largest music stores implied when talking costs on the motor trucks which they had in use. This firm is using at present six 3-ton trucks operating 10 hours a day. Six pianos are carried to a load, piano weight

running from 600 to 800 pounds while a player piano weighs close to 1,000 pounds. Runs of 50 miles per day are usual. Three movers are taken to a truck as well as the driver—four men in all.

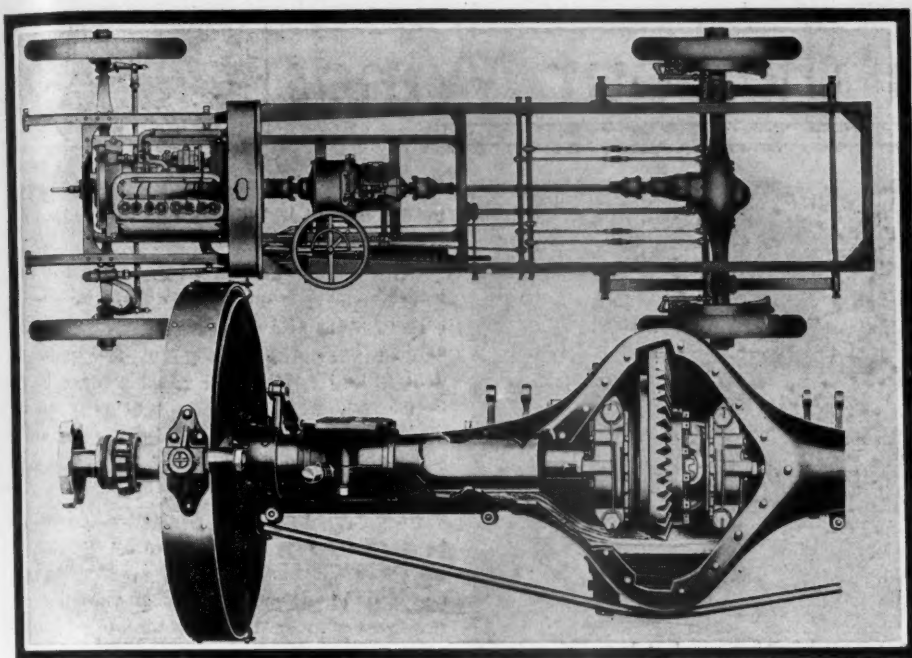
The trucks are handled from a central office near the piano store center of the city, being sent out from here, and the whole system operated by telephones largely. Trucks as a rule are loaded both ways. Nearly 45 per cent of the hauling is in transfer work or in returning rented pianos or the like so that as fast as pianos are unloaded others take their place.

Some of the hauling is done to places where it is impossible to take pianos up stairways. In this case a block and tackle is fixed in position and the piano hoisted up into place, when possible by the power of the motor truck. Instead of the men hoisting on the rope this is hitched to the back of the truck which proceeds down the street, its pull on the rope hoisting the piano while the men below operate the guide ropes. This system is in use by practically all of the Chicago stores using motor trucks.

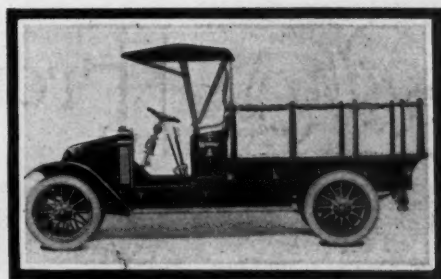
The following firms are among those served under contract: Julius Bauer & Co., Vose & Co., F. G. Smith Co., Story & Clark Co., Adam Schaaf, Baldwin Piano Co., Chase & Baker Piano Co., Louis B. Malecke, King Piano Co., Vollmer Piano Co.

Not all of these are served by the same contract firm, though most of them have it in the hands of the Star Motor Delivery Co., a newly organized haulage company operating Mack trucks.

One peculiar feature in this work that is noticed by the bystander is the method of changing signs on the trucks to fit the firm for which the particular delivery is being made. These signs are separate and fit in grooved pieces of the body.



CHASSIS AND REAR AXLE OF STEWART TRUCK



STEWART WITH EXPRESS BODY

New Stewart Delivery Car

AMONG the latest of the commercial vehicles is the new Stewart delivery car built by the new Stewart Motor Corporation, Buffalo, N. Y. This new car is four-cylinder, 1500-pound design and is characterized by the simplicity which has marked the cars built by T. R. Lippard and R. G. Stewart. These two men were the organizers of the Lippard-Stewart Motor Car Co., which they recently left to form the new corporation. The Stewart car is built in one chassis model but bodies of six different styles are supplied. The body styles include panel, express, open box, stake platform and undertaker's car. It has been the aim of the designers of the Stewart delivery car to obtain first, simplicity; and second, support of the units so that they are quickly accessible and easily removable in order to reduce the time required in making repairs—a feature of much importance in commercial car operation.

The power plant is of the two-unit design, comprising a Continental motor as one unit and the gearset and clutch as another. The Stewart motor is a four-cylinder monoblock construction with L-head cylinders of $3\frac{3}{4}$ inches bore and $5\frac{1}{4}$ inches stroke. The crankshaft is of the three-bearing type and is made of carbon steel, drop forged and heat treated. Bearings are ground to size and are $1\frac{1}{4}$ inches in diameter. The front bearing is $2\frac{3}{4}$ inches in length, the middle 3 inches and the rear 4 inches. The connecting rods are I-beam section drop forgings. They are $10\frac{1}{2}$ inches in length with a $2\frac{1}{2}$ -inch bearings. The valve cams are integral with the camshaft which runs on nickel babbitt bearings and is lubricated by oil

that collects in oil pockets. Removal of the camshaft is permitted by simply removing the gearcase cover. The water-jacket head is cast separately. The inclosed valves are operated on one side of the motor by a single camshaft driven by helical timing gears. Inlet and exhaust valves are interchangeable.

The crankcase is split horizontally, all bearings being carried in the upper half. The lower half contains the oil reservoir and carries a combined oil-filler and breather pipe. A constant-level splash system of lubrication is used and is effected by means of two plunger pumps driven by an eccentric from the camshaft. Water circulation is maintained by a centrifugal pump driven from the camshaft. Circulation of air is obtained by means of blades attached to the periphery of the flywheel which is at the rear of the motor. The radiator shows a departure from common American practice, in that it is placed at the dash, permitting a hood of the sloping European type. Ignition is of the single type by high-tension magneto with fixed spark.

The gearset and clutch case are integral, forming the second unit of the power plant. The clutch is of the dry plate type with five raybestos and six steel plates, 9 inches in diameter. The entire clutch is easily removable by simply removing the front cover and the spicer double universal joints between flywheel and clutch. The gearset provides three forward speeds and is equipped with Timken roller bearings. The gearset and emergency brake levers are mounted directly over the center of the gearset with direct connections to it. The

steering column is on the left and the gear is of the worm and gear type. The worm wheel is integral with the shaft. The drive shaft is $1\frac{1}{4}$ inches in diameter, fitted at each end with two universal joints.

The rear axle is of the floating type, its pressed steel housing shaped like the truss of a bridge. It is equipped with reinforcing sleeves to increase still further its ability as a weight carrying axle for commercial use. The outer ends of the sleeves support the bearings and the wheels. The sleeves go in beyond the spring seats, where the car's weight rests. Timken roller bearings are used both in the differential and in the hubs.

Two sets of brakes—expanding and contracting—are on the rear axle. They are 17 inches in diameter. The gear ratio of the differential is 5 to 1. The frame is generous in size and is of a high carbon steel, heat-treated. It is $4\frac{1}{2}$ inches deep at the point of the greatest stress. A sub-frame is used, on which are mounted the motor and transmission and clutch unit, to assure perfect alignment. Front springs are semi-elliptic, 38 inches in length and the rear springs are the same type 50 inches in length. The front axle is of I-beam type, of Timken construction. All spring bolts, pedal shafts, brake and countershafts are lubricated by means of large grease cups placed on the outside of the frame where they are readily accessible. The wheelbase of the chassis is 126 inches and the wheels are equipped with 34 by 4-inch pneumatic tires in front and 35 by $4\frac{1}{2}$ in the rear.

STARTS MOTOR TRUCKING BUSINESS

The Heavy Tonnage Transportations Co., of Toledo, a new concern recently incorporated under the laws of Ohio with a capital stock of \$150,000 has begun business in the rapid transit of merchandise in and out of the city by means of motor trucks owned and operated by the company. Several heavy motor trucks already are in operation and it is expected to put into operation fifteen heavy tonnage motor trucks of from 3 to 8 tons capacity. This company has taken over the Parsons garage, corner Jefferson avenue and Michigan street. Beside the heavy transit business the concern will conduct a general garage and repair business. The office of the company will be located in the Meredith building. The company is now doing business for brick and cement concerns.



From the Four Winds



PULLMAN PACKARD DESIGNED FOR TOURING PURPOSES

MASON'S Fuel Consumption—In the Elgin road races the two competing Masons are reported to have averaged 14 miles to the gallon of gasoline and thirty-seven miles to a gallon of oil. They ran in the Jencks, Aurora and Elgin cup events.

Ontario Posts 1,000 Signs—Through activity of the Ontario Motor League more than 1,000 signs have been placed in the province of Ontario. These roads have been fixed up with signs: Toronto to Port Hope, Toronto to Jackson's Point, Toronto to Guelph, Toronto to St. Catharine's, via Hamilton; Guelph to Hamilton, via Galt.

Big Load for Abbott—One of the most wonderful stunts ever performed by a motor car is reported from Byers, Texas, when a 30-horsepower Abbott-Detroit pulled three heavy farm wagons, a surrey and two buggies linked together. In the vehicles were seventy-eight persons, twenty of the number being children. The total weight pulled by the car was nearly 14,000 pounds. The car was driven by Dr. A. T. Reed, a prominent physician of that city.

Motor Cars in South Africa—According to a report from the American consul at Port Elizabeth, the financial condition in South Africa at the present time is favorable for increased trade. A year ago public sentiment was averse to the motor car, it being declared that the country was not suited to such a vehicle, particularly in the country. Now the motor car is common in the country and traveling men are making use of the car in traversing through the districts. Roads are being improved, which, with a prosperous condition among the farmers, should increase the sales to a great extent. Cars with good clearance are the most desirable. The demand is for

medium and low-priced touring cars, and runabouts of 15 to 20 horsepower. The trade demands a solidly-constructed car, one suited for rough roads. An increase of \$194,733 in 1911 over 1910 imports indicates the trend of the motor car in South Africa.

Dallas' Car List Growing—The four thousandth motor car license to be issued from Dallas will be given out this week. This ranks Dallas as the leading motor city in the state, and gives over a thousand licenses more than any other city in the state of Texas.

British Columbia Registrations—Figures supplied by the provincial police, who handle motor licenses for the province, show that 3,568 machines have been registered in British Columbia. Of these it is estimated that about 1,800, or a little more than half, are issued from the Vancouver office, covering the city of Vancouver, New Westminster, North and South Vancouver and all the adjoining municipalities.

Motor Poker the Latest—Motor poker is the latest fad in Buffalo, N. Y. Recently two enthusiastic motorists played the game while traveling in a touring car from Lockport to Buffalo. The motorists in question took position on a highway frequently traversed by cars. The players drew for position; that is, one of the men arranged that his friend should select the first car that came along. The men bet 10 cents on the numbers carried by each car. If the car was numbered 59,444 that signified three four-spots; if 12,345 that was a straight; if 10,000 that would be four aces, each cipher standing for an ace and so on, the numbers on the passing cars to decide who won the 10 cents at stake. How closely contested was Buffalo's first game of motor poker may be realized when

it is stated that, although 441 cars were passed during the game, only 80 cents was lost by one motorist.

Iowa's Car Census—According to the latest reports from the office of the secretary of state of Iowa, there are now 38,924 cars in that state. There are 1,480 licensed dealers and 3,890 motor cycle owners have registered. During the present year up to August 31, \$45,657.81 has been paid into the state treasury for motor registrations; \$14,851.29 was paid in August.

New York Collects a Million—According to statistics just made public by Secretary of State Lazansky, the New York tax levied on chauffeurs and motor vehicles for the fiscal year ending on September 30 will total \$1,000,000. The greatest gain in any one year in the tax receipts was last year, owing to introduction of motor trucks into business, but last year's figures will be surpassed by this year's tax.

City and County at War—The city of Des Moines and Polk county, Iowa, are at war over the manner in which the motor tax funds shall be spent. The county claims the funds thus derived must be spent on the city streets which lead to the main highways of the county, while the city officers dispute this. Ralph Bolton, representing the taxpayers, has brought an injunction against the city to show that the county officials are right.

Pullman Packard the Latest—Luxury in motor travel, together with independence from hotels, has been achieved by U. H. Dandurand, of Montreal, in a Pullman Packard. On a 3-ton Packard truck chassis has been mounted a body whose interior arrangement is similar to that of a private railroad car. Twenty-five persons are easily carried on short trips and for long journeys there are accommodations for the comfort of eleven, including chauffeur and cook. The body is 25 feet, 3 inches over all; 6 feet, 6 inches wide; 9 feet, 6 inches, outside height; 6 feet, 6 inches, inside height. The compartments consist of a stateroom for the driver in front; a women's stateroom with sleeping room for five; a men's stateroom with quarters for four. This section is also the dining and smoking room, with two extension tables and a folding desk. In the rear is a kitchenette, compact and complete from stove to refrigerator. There is a telephone system with four instruments, placing every compartment in touch with the driver. The interior finish is mahogany; the drapings of green silk and plush with gold lace trimmings, with carpets to match. The lighting system consists of a dynamo with two accumulators having a capacity of 160 amperes. The front of the car has six lights, two electric, two gas and two oil;

the rear has a red tail light, an electric dome light and two railway signal lights. Under the body floor are five lockers containing planks to reinforce weak bridges, blocks and tackle, and an entire touring emergency outfit. The body was built by P. Brault, Montreal.

Now for Southern Motoring—September 1 marked the opening of the real touring season in New Orleans and Louisiana. While motoring as a pleasure continues the year round here, it is more animated from September 1 to May 1, due to the increased number of cars, as many of the northerners who winter in the south have their cars with them. As there generally is much less rain in the fall than at any other season, roads are in better condition and out-of-town trips are more popular.

Berry-Carrying Car—An accompanying illustration gives some idea of how the ordinary touring car may be converted into a very useful truck for carrying light loads such as fruit, etc. The owner of the car, L. A. McClintock, of White Salmon, Wash., had a 16-acre tract of strawberries and during berry season the berries had to be hauled as soon as possible after they were picked to the station, 3½ miles away. This called for a swift but jarless means of transportation. His 40-horsepower Velie solved the problem. By loosening six bolts and a few screws his brother figured out how he could remove the body and substitute it with one more suitable for hauling berries. By so doing he saw that he could drive the car in place of old Dobbin to the station with the berries. The body, which was somewhat crude, though substantial, was made of soft wood at a cost of about \$10, the bed of it being 5 by 5½ feet. The car was thus converted into a very serviceable truck and hauled loads up to 2,000 pounds. The illustration shows a load of forty-eight crates each weighing 30 pounds or better than 1,500 pounds in all, and the machine hauled this easily up grade or down. After the berry



PRIVATE GARAGE ERECTED AT FINDLAY, O.

season the machine took its touring car form again and the truck body laid aside till the next occasion when the machine can be used to a better advantage as a truck than a touring car.

Model Garage in Findlay—One of the prettiest garages ever constructed in Findlay, O., is that just completed by Mrs. E. Wannamaker. The roomy little building holds a Chalmers 36 and Waverley coupe. The building cost something less than \$2,000.

Tampico's Progress—In July of 1911 there was not a single motor car in Tampico, Mexico. Today there are seventy-five and a movement for better roads and streets is accomplishing great results, which will mean a rapid increase in the number of cars in the Mexican port, according to the American consul, Clarence A. Miller. Most of the machines now in use in Tampico are second-hand cars which have been shipped from the United States

and Mexico City, but with the street and road improvements and due to the general prosperity arising from the development of oil fields in the vicinity of the town, Consul Miller thinks a good market is offered for light cars.

Mississippi Profiting—Slightly in excess of \$27,000 has flowed into the coffers of the state of Mississippi due to the recent state tax on motor cars. State Auditor Thompson reports that an additional \$10,000 likely will be collected if the law withstands the tests now being made by the suits brought in the supreme court.

Now Roads Are Wanted—Since the advent of the motor car in Colombia there has been a decided increase in the demand for better streets and roads. The American consul at Barranquilla, Isaac A. Manning, is of the opinion that American car manufacturers could do well by submitting prices to dealers at his post. As Puerto Colombia and Cartagena soon are to be connected with Baranquilla by model highways, the consul suggests that the present time is very propitious for the advertising of American motor cars.

Road Work in Nebraska—A meeting of the directors of the Platte Valley Transcontinental route was held in Columbus, Neb., last week, the representatives of fifteen counties being present. It was decided to establish a correspondence bureau, to keep each section in hand. The directors will report monthly to Secretary B. D. Parker, at Julesburg, Colo., the condition of the road in their counties, whether there are any bad spots, and, if so, what is being done to repair them. Each representative will make an effort to enlist county, town and individual aid in improving the road. That part of the highway west of Columbus which was one of the worst places on the route 3 months ago, has been rebuilt into a gumbo sand road which has been approved.



VELIE THAT IS USED FOR BOTH BUSINESS AND PLEASURE

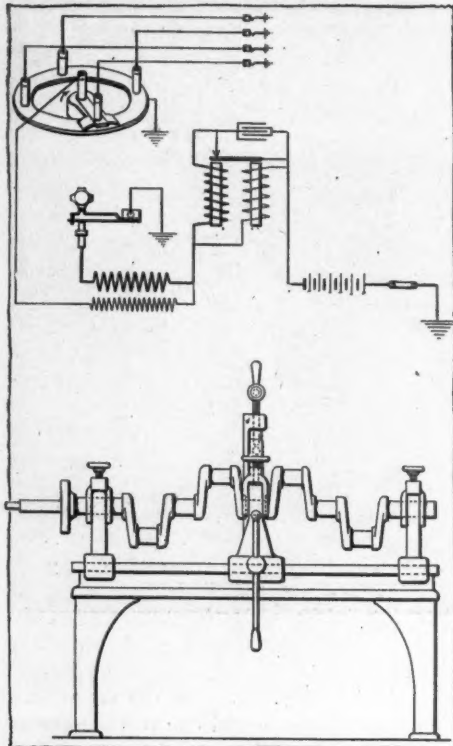


FIG. 1—DELCO IGNITION SYSTEM AND PAINE SHAFT STRAIGHTENER

PATENTS ISSUED SEPTEMBER 3, 1912

- 1,037,187—Vulcanizing Mold. Alexander Adamson, Akron, Ohio. Filed October 9, 1911. Serial No. 653,668.
- 1,037,203—Locking Device for Motor Cars. John Bystrom, Chicago, Ill., assignor to John Howard McElroy, Chicago, Ill. Filed December 28, 1911. Serial No. 668,386.
- 1,037,211—Connecting Rod Coupling. Albert De Dion and Georges Bouton, Puteaux, France. Filed October 6, 1909. Serial No. 521,323.
- 1,037,222—Traction Engine. William Durran, Percy township, Ontario, Canada. Filed August 14, 1911. Serial No. 643,959.
- 1,037,229—Resilient Mounting for Wheels. William Lee Foster and George H. Foster, Kansas City, Mo. Filed January 18, 1911. Serial No. 603,770.
- 1,037,239—Lubricator for Explosion Engines. Earle W. Goodnow, Lansing, Mich., assignor to the New-Way Motor Co., Lansing, Mich. Filed December 6, 1911. Serial No. 664,168.
- 1,037,250—Process for Making Cores for Manufacturing Tire Shoes. Robert M. Hinman, Akron, Ohio, assignor of one-half to Frank Nolte, Akron, Ohio. Original application filed December 1, 1909. Serial No. 530,876. Divided and this application filed October 30, 1911. Serial No. 657,520.
- 1,037,301—Shaft Straightening Machine. Timothy J. Paine, deceased, Watertown, Mass., by Julia A. Paine, administratrix, Watertown, Mass. Filed April 16, 1912. Serial No. 691,211.
- 1,037,307—Spark Plug. Anthony S. Pierrel, Washington, La. Filed August 10, 1911. Serial No. 643,426.
- 1,037,311—Elastic Tire. Philip W. Pratt, Boston, Mass. Filed June 11, 1910. Serial No. 566,331.
- 1,037,312—Motor Truck. John Q. Primm, Lincoln, Ill. Filed September 28, 1911. Serial No. 651,880.
- 1,037,336—Support for Motor Cars. Charles W. Schubert, Cottonwood, Iowa. Filed November 4, 1911. Serial No. 658,608.
- 1,037,351—Alarm for Motor Cars, Etc. Anthony Son, Boston, Mass., assignor, by direct and mesne assignments, to Payne Mfg. Co., Boston, Mass., a corporation of Massachusetts. Filed February 17, 1911. Serial No. 609,185.
- 1,037,354—Steering Wheel Device. Arnold M. Squire, Cleveland, Ohio. Filed August 29, 1911. Serial No. 646,691.
- 1,037,360—Pneumatic Support for Vehicles. Charles J. Stovel, San Francisco, Cal. Filed January 22, 1912. Serial No. 672,617.
- 1,037,376—Starter for Internal Combustion Engines. Bernhard Volkmar, New York, N. Y., assignor to Volkmar Auto Starter Co., a corporation of New York. Filed June 17, 1910. Serial No. 567,388.
- 1,037,378—Cut-out for Mufflers. George C. Ward, St. Louis, Mo. Filed April 25, 1910. Serial No. 557,391.
- 1,037,383—Lubricating device. Otto H. L. Wernicke, Grand Rapids, Mich. Filed February 12, 1912. Serial No. 677,067.
- 1,037,386—Illuminated License Number and

Current Motor Patents

- Signal for Vehicles. Holland R. Wildman, York, Nebr. Filed April 1, 1912. Serial No. 687,927.
- 1,037,394—Hood for Motor Cars. Clarence S. Wood, Detroit, Mich., assignor to Briscoe Mfg. Co., Detroit, Mich., a corporation of Michigan. Filed June 4, 1909. Serial No. 600,185.
- 1,037,395—Motor Car Hood. Clarence S. Wood, Detroit, Mich., assignor to Briscoe Mfg. Co., Detroit, Mich., a corporation of Michigan. Filed October 16, 1905. Serial No. 523,035.
- 1,037,400—Internal Combustion Engine. Albert E. Youngren, Kewanee, Ill. Filed April 11, 1911. Serial No. 620,423.
- 1,037,401—Timer for Explosion Engines. Albert E. Youngren, Kewanee, Ill. Filed April 11, 1911. Serial No. 620,424.
- 1,037,404—Shock Absorber. Arsene Zeppelin, Brookline, Mass. Filed November 17, 1911. Serial No. 660,879.
- 1,037,412—Tire. Harry O. Bartlett, Caldwell, Ohio. Filed October 16, 1911. Serial No. 654,893.
- 1,037,414—Tire Fastening Device. William Leopold Bauer, Covington, Ky. Filed June 12, 1911. Serial No. 632,608.
- 1,037,427—Universal Joint. George H. Brush, Chicago Heights, Ill., assignor of one-third to Wesley G. Nichols, Chicago Heights, Ill. Filed April 18, 1911. Serial No. 621,926.
- 1,037,437—Internal Combustion Engine. Aurin M. Chase, Syracuse, N. Y. Filed September 29, 1910. Serial No. 584,398.
- 1,037,446—Metallic Resilient Wheel. Thomas H. Coulter, Cleveland, Ohio, assignor of one-half to John T. Schleffenheimer. Filed August 7, 1911. Serial No. 642,686.
- 1,037,462—Governor-Controlled Igniter. Joseph Fleischmann and Philip Wolf, Marshfield, Wis. Filed April 28, 1911. Serial No. 623,818.
- 1,037,466—Starter for Explosion Engines and Self-Propelled Vehicles. Delamere B. Gardner, Chicago, Ill. Filed December 4, 1909. Serial No. 531,293.
- 1,037,477—Motor Vehicle Spring. Allen E. Hall, Merion, Pa. Filed June 28, 1911. Serial No. 635,708.
- 1,037,478—Internal Combustion Engine. Edgar O. Hayes, Milwaukee, Wis. Filed September 30, 1910. Serial No. 584,609.
- 1,037,482—Tire Case. Charles F. Hopewell, Newton, Mass. Filed June 21, 1912. Serial No. 704,947.
- 1,037,485—Electrical Appliance for Gas Engines. John W. Jepson, Depew, N. Y., assignor by mesne assignment, to Gould Coupler Co., a corporation of New York. Filed March 29, 1910. Serial No. 552,191.
- 1,037,491—Ignition Apparatus for Explosion Motors. Charles F. Kettering, Dayton, Ohio, assignor to the Dayton Engineering Laboratories Co., a corporation of Ohio. Filed September 15, 1909. Serial No. 517,188.
- 1,037,492—Ignition System. Charles F. Kettering, Dayton, Ohio, assignor to the Dayton

- Engineering Laboratories Co., a corporation of Ohio. Filed November 2, 1910. Serial No. 590,406.
- 1,037,510—Split Roller Bearing. John Newmann, Brooklyn, N. Y. Filed September 11, 1911. Serial No. 648,767.
- 1,037,526—Explosive Engine. Henry J. Podlesak, Chicago, Ill. Filed December 7, 1910. Serial No. 596,062.
- 1,037,574—Spring Wheel. Dorr Amerman, near Longmont, Colo. Filed September 3, 1910. Serial No. 580,289.
- 1,037,583—Shock Absorber. Joseph Benny, Newark, N. J. Filed June 23, 1912. Serial No. 705,730.
- 1,037,593—Antirattler for Motor Car Doors. Etc. Franklin Cole, Pontiac, Mich. Filed December 7, 1911. Serial No. 664,332.
- 1,037,601—Means for Locking Motor Car Starting Cranks. William J. N. Davis, Chicago, Ill. Filed October 14, 1910. Serial No. 587,007.
- 1,037,602—Spring Wheel. Progor De Bogory, Coconut Grove, Fla. Filed January 26, 1911. Serial No. 604,898.
- 1,037,604—Wind Shield. Harry A. Douglas, Chicago, Ill., assignor to the Adams & Westlake Co., a corporation of Illinois. Filed November 22, 1909. Serial No. 529,818.
- 1,037,605—Internal Combustion Engine. John H. Eaton, Rochester, N. Y., assignor of one-third to James F. Eaton, Rochester, N. Y. Filed April 29, 1908. Serial No. 429,835.
- 1,037,610—Automatic Vehicle Jack. Clyde N. Friz, Baltimore, Md. Filed March 13, 1912. Serial No. 683,561.
- 1,037,622—Starting Device for Gas Engine. Richard C. Hiller and David W. Wade, Cleveland, Ohio. Filed December 21, 1910. Serial No. 598,571.
- 1,037,642—Resilient Tire. Charles John Koopman, Middletown, Cal. Filed March 9, 1909. Serial No. 482,294.
- 1,037,653—Starting Device for Internal Combustion Engines. Raymond H. Muntz, Greenville, Pa., assignor to Geizler Starting Device Co., New York, N. Y. Filed September 13, 1910. Serial No. 581,855.
- 1,037,663—Starting Device for Engines. James O. Roberts and John W. Nunn, Granger, Tex. Filed August 21, 1911. Serial No. 645,140.
- 1,037,667—Explosive Engine. William Alexander Schaffer, Waco, Tex., assignor of one-fourth to John L. Orand, Waco, Tex. Filed September 27, 1910. Serial No. 584,027.
- 1,037,677—Tire Armor. John Robert Smith, Flagstaff, Ariz. Filed December 7, 1911. Serial No. 664,354.
- 1,037,686—Tire. Thomas Toomey, Scranton, Pa. Filed March 28, 1911. Serial No. 617,395.
- 1,037,699—Wheel. John F. Wilmot, Detroit, Mich. Filed February 4, 1909. Serial No. 475,986.
- 1,037,718—Transmission Gearing. Frank A. Babcock, Syracuse, N. Y., assignor of one-half

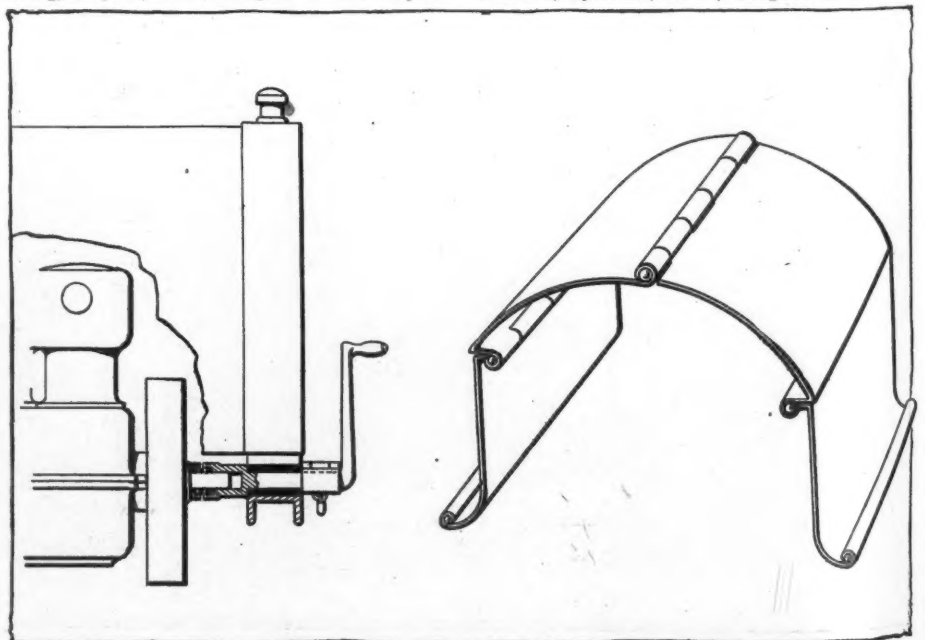


FIG. 2—DAVIS CRANK LOCK AND BRISCOE HOOD

Inventions of the Week

to John E. Maloney, Syracuse, N. Y. Filed September 9, 1911. Serial No. 648,450.

1,037,730—Road Vehicle Suspension Arrangement. Leonard Eugene Cowey, Kew Gardens, England. Filed February 6, 1909. Serial No. 476,551.

1,037,753—Vehicle Wheel Tire. John A. Gerhart, Marietta, Ohio. Filed October 12, 1911. Serial No. 654,382.

1,037,754—Cooler. Raleigh C. Gildersleeve, New York, N. Y., assignor to El Arco Radiator Co., New York, N. Y., a corporation of New York. Filed March 27, 1909. Serial No. 486,065.

1,037,808—Planetary Gearing. Kenneth Trowbridge, Atlanta, Ga. Filed August 5, 1910. Serial No. 655,681.

1,037,814—Hub Cap. Francis Whitney, Hopkinton, N. Y. Filed March 29, 1911. Serial No. 617,729.

1,037,816—Pilot Lamp Operating Mechanism. Wilford E. Anderson, Emmett, Idaho. Filed October 21, 1911. Serial No. 656,059.

1,037,828—Spark Timing Device. Leland F. Goodspeed, Wilkesburg, Pa. Filed March 2, 1908. Serial No. 418,731.

1,037,829—Tire for Vehicle Wheels. Clarence B. Howe, Utica, N. Y., assignor of one-half to James H. Goodier, Utica, N. Y. Filed July 5, 1910. Serial No. 570,288.

1,037,833—Automatic Regulation for Carbureters. Edward P. Noyes, Winchester, Mass. Filed October 12, 1911. Serial No. 654,239.

1,037,834—Carbureter. John W. Raymond, Dayton, Ohio, assignor to the Air Friction Carbureter Co., Dayton, Ohio, a corporation of Ohio. Filed October 9, 1911. Serial No. 653,667.

PATENT DESIGNS

42,971—Motor Car Horn. Ray H. Manson, Elyria, Ohio, assignor to the Dean Electric Co., Elyria, Ohio, a corporation of Ohio. Filed March 2, 1911. Serial No. 681,278. Term of patent, 7 years.

42,972—Motor Car Horn. Ray H. Manson, Elyria, Ohio, assignor to the Dean Electric Co., Elyria, Ohio, a corporation of Ohio. Filed April 22, 1912. Serial No. 692,504. Term of patent, 7 years.

LOCK for Motor Car Cranks—No. 1,037,601, to William J. N. Davis, Chicago. Filed Oct. 14, 1910, dated Sept. 3, 1912. With a view to making the theft of a motor car impossible, the design covered by this patent consists of a means of so locking the starting crank of a motor car, that it cannot be used to start the engine.

This is accomplished by means of a sleeve which is placed between the shaft and the motor of the starting crankshaft so as to make engagement of the ratchet impossible by preventing the longitudinal movement of the crank. This sleeve is made in two sections, which are locked in position by means of two perforated lugs, through which a padlock is linked. This device would make cranking of the car impossible but would not prevent starting on the spark, nor the theft of the vehicle by towing.

Adjustable-Gap Spark-Plug—No. 1,037,307; to Anthony S. Pierul, Washington, La. Filed Aug. 10, 1911, dated Sept. 3, 1912. This spark plug consists of a steel shell, screwed into the cylinder, with an oblique inside surface. Within this is an insulating element and a retaining ring. Within the insulating element is a core, having a curved electrode extending below the bottom or inside of the plug. This core can be turned or moved up and down, having a guide-collar within a counterbore in the lower portion of the insulating element, and a thumb button at its top. This thumb button, when turned alters the length of the spark gap, because of the angle of the lower face of the spark plug shell, so that by this means, it may be adjusted for a very small gap, or turned away until the gap is greater than the spark will jump. The reciprocating movement is for the purpose of temporarily cutting out one plug by increasing the length of the gap beyond the maximum length of the spark. A spring is seated between

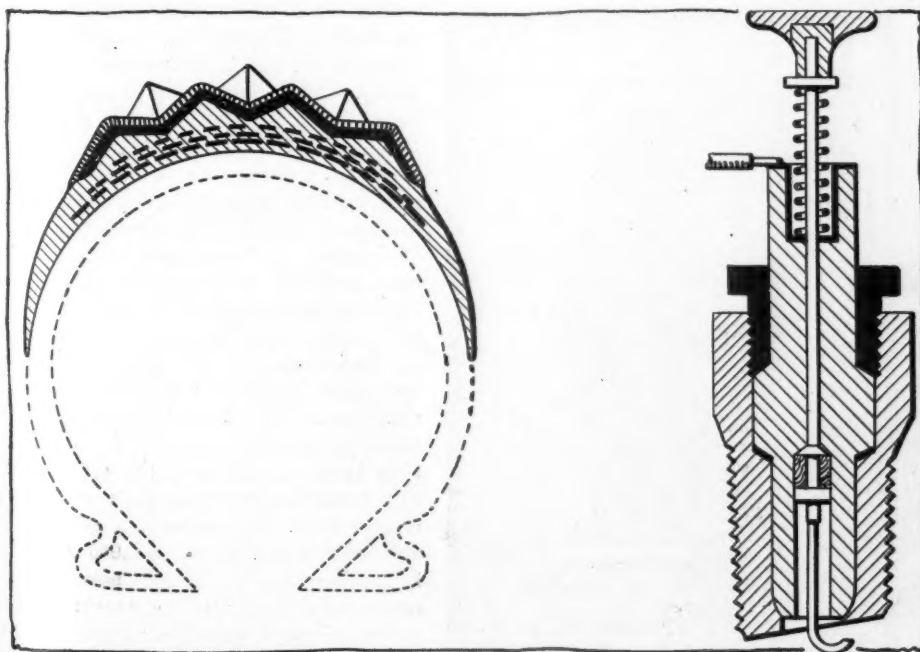
the plug body and the thumb nut, to hold the electrode normally in sparking position.

Machine for Straightening Bent Shafts—No. 1,037,301; to Timothy J. Paine, deceased, Watertown, Mass., by Julia A. Paine, administratrix, Watertown, Mass. Filed April 16, 1912, dated Sept. 3, 1912. This device consists of a bed, upon which a central member may slide, and two stationary supports at either end. These supports are provided with V-shaped grooves in their top surfaces, and clamps, for the purpose of clamping cylindrical shafts across them. The central member, also provided with grooved seats, may be locked in any position with relation to the stationary supports, to be clamped to any portion of the shaft. So clamped, the shaft supporting portion may be raised or lowered by means of a screw and nut mechanism, by which any portion of the shaft that is out of true may be bent to its proper shape.

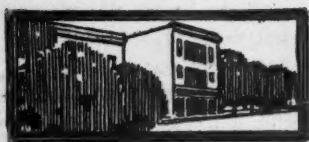
Delco Ignition System—No. 1,037,492; to Charles F. Kettering, Dayton, Ohio, assignor to The Dayton Engineering Laboratories Co., Dayton, Ohio. Filed Nov. 2, 1910, dated Sept. 3, 1912. This system is of the usual high-tension type, differing from standard in that the circuit is normally grounded through a permanently grounded magnetic switch, whose contact with the sparking circuit is broken simultaneously with the making of the contact with each of the spark plug circuits, by the high-tension distributor. The balance of the system comprises a battery, induction coil, vibrator, and condenser, with an auxiliary coil in conjunction with the grounding switch, for the purpose described above.

Brisco Motor Car Hood—No. 1,037,395; to Clarence S. Wood, Detroit, Mich., Assignor to Briscoe Mfg. Co., Detroit, Mich. Filed Oct. 16, 1909, dated Sept. 3, 1912. This patent refers to an improved hinge construction for the usual form of motor car hood. The hinge, which is of the ordinary piano type, is disposed within the hood, invisible externally, producing a neater appearance than an exposed hinge. A more practical advantage of this type of construction, is that the inward extensions of the hinged portions, extending at right angles to these portions, prevent the spreading of the hood parts, keeping the hood snugly against the flanges on the dash and radiator, when in position.

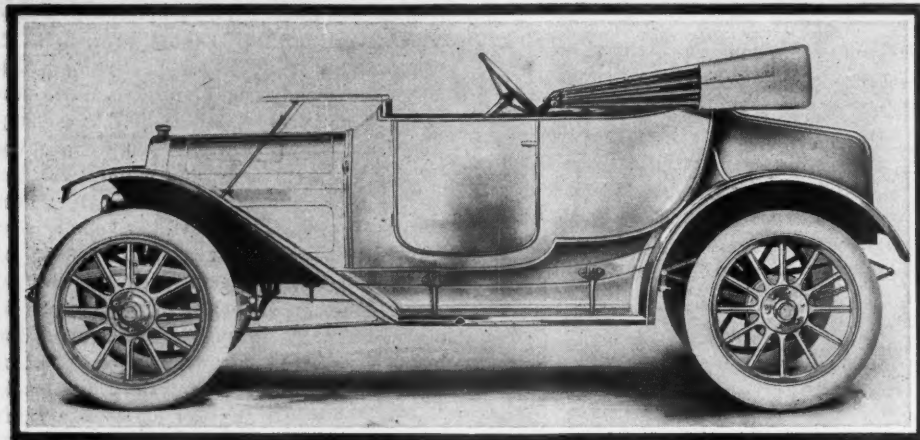
Non-Skid Tire Tread—No. 1,037,311; to Phillip W. Pratt, Boston, Mass. Filed June 11, 1910, dated Sept. 3, 1912. Similar to numerous other non-skid rubber tire treads this form of construction differs in the shape of the raised portions of the tread. These projections are in the form of diamond-shaped pyramids, built up on top of a tread, which with the additional material in the spikes worn off, would still be substantially as thick as a smooth tread tire. The fabric backing extends into the corrugations.



PRATT NON-SKID TREAD AT RIGHT AND PIERUL ADJUSTABLE GAP PLUG AT LEFT



Among the Makers and Dealers



WAVERLEY ELECTRIC SHELTERED ROADSTER, MODEL 90

JOIN Abbott Forces—W. N. Eyster has been appointed service manager of the Abbott Motor Co., of Detroit, with W. A. Reichert as his assistant.

Many Going in St. Louis Show—There are in St. Louis eighty-three motor car manufacturers and dealers and all but two of these will have exhibits at the outdoor show which will be held there at one of the summer gardens, the week of October 7.

Adopts 9-Hour Day—The Aluminum Castings Co.'s two plants in Buffalo, commencing on October 1, will put its entire business on a 9-hour basis. The original intention of the concern, according to Manager Adams, was to put the 9-hour day into effect on May 1, but the strike of the molders and coremakers in the plants prevented this. The company will continue to maintain a strictly open shop.

Tennant Returns to Chicago—W. G. Tennant, well known as head of the Peerless Motor Car Co. of New York city, has resigned. Mr. Tennant's resignation was tendered that he might assume active management of the Tennant Motor Limited, 2447 Michigan avenue, Chicago, distributor of Henderson motor cars. He will be associated with his brothers, J. G. and J. W. R. Tennant.

Atlanta's Show Prospects—At a recent meeting of the Atlanta Automobile and Accessory Association 19,850 square feet of floor space in the Atlanta Automobile show of November 16-23 was engaged and checks for 25 per cent of the amount due were paid in. This means that more space has already been subscribed for than was used last year and that the financial success of the show is assured. The cars which will be shown in the space already subscribed are R. C. H., Locomobile, Cadillac, Premier, Cole, Pope, Velie, Case, Studebaker, Michigan, Marmon, Hudson, Ford, Mitchell, Oakland, Stevens-Duryea, Pierce-Arrow, Apperson, Stearns, Overland, Pack-

ard, Firestone-Columbus, Dorris and others.

Car Given Clarkson—The Society of Automobile Engineers has united in formally presenting Secretary and General Manager Coker F. Clarkson of the society with a new 1913 Hudson car. The gift is an appreciation of Mr. Clarkson's efficient service in furthering the cause of standardization in motor car engineering.

Making Good Road to Speedway—In keeping with a promise made the company some time ago, the city of Indianapolis is improving the Crawfordsville road from Indiana avenue to the Emrichsville bridge across Fall Creek, in order to provide a passable highway for the Prest-O-Lite Co. on the way to the company's new plant near the Indianapolis motor speedway. The new plant, nearing completion, will cost approximately \$350,000. The city council has appropriated \$10,000 and the board

of park commissioners \$5,000 for building the new road. The Indianapolis and Milwaukee plants and the plant of the Esterline Co., now at Lafayette, are to be combined in the new plant near Speedway.

Weston-Mott Invades Foreign Field—The Weston-Mott Co. of Flint, Mich., manufacturer of axles, hubs and rims, has established a branch at 136 Longacre, London, W. C., Eng., and the building of a large export trade will be pushed with vigor.

Willman Promoted—G. L. Willman has been promoted to the office of sales manager for the Warren Motor Car Co., Detroit. Mr. Willman succeeds George D. Wilson, the latter having gone to New York city as the eastern representative of the Warren company.

Adding to Plant—The Detroit Pressed Steel Co. will soon commence operations on an addition to its plant, which is to be one story in height and measure 100 by 200 feet. The increased factory space will allow the concern to triple its output, which is said to be necessary, due to the rapidly increasing business.

Harris Oil Co. Changes—Announcement has been made of the incorporation of the A. W. Harris Oil Co., of Providence, R. I. The new corporation will succeed the A. W. Harris Oil Co., which was formerly conducted by the late A. Walter Harris. The incorporators of the new company are Benjamin S. Terry, president; Arthur D. Greene, treasurer, and George F. Heywood, secretary. The capital stock is \$75,000. The company is incorporated under the laws of Rhode Island.

Croxtan Plant Nearly Ready—The new plant of the Croxtan Automobile Co., at Washington, Pa., is almost ready for occupancy. The main building of the new works is 120 by 500 feet, being a three-bay building, each bay being 40 feet wide. It is of steel frame and brick construction and required about 500 tons of structural steel to erect. The foundations and floors are of concrete. As much glass as possible has been used in the sides of the building. The former plant of the company was in Cleveland, O., and these works have been practically dismantled now. Last week six carloads of machinery were shipped to the new plant. The company has been making taxicabs, touring cars and trucks and has built up a large business. Washington and Pittsburgh capitalists are interested in the new venture. The company is capitalized at \$300,000. About \$40,000 was expended in the erection of the new plant. With the new machinery, to be used in addition to that shipped from Cleveland, the company will be able to manufacture 1,000 cars annually. All the machinery is to be mo-



NEW STEARNS-KNIGHT RADIATOR CAP

tor-driven, the power to be furnished by the West Penn Light and Power Co. J. P. Stoltz, of Cleveland, will retain the presidency of the concern.

Hayden Joins Nyberg—The Nyberg Automobile Works has added another to its list of agents, John W. Hayden, who will act as special agent for the Nyberg motor cars in Chicago and immediate vicinity. Mr. Hayden until recently had been manager of the United Motor Indianapolis branch.

Packard Men at Pierce Factory—One hundred and fifty Packard dealers from the Packard factories at Detroit, Mich., inspected every department of the Pierce-Arrow Motor Car Co. in Buffalo. The visitors went to the plant in five sight-seeing motor buses which they boarded at the Buffalo dock whence they came on a lake steamer from Detroit, where they recently concluded their annual convention. After inspecting the Pierce-Arrow plant, the Packard men returned to Detroit.

Will Move to Columbus—The Pharis Tire and Rubber Co., of Columbus, O., which was incorporated recently with a capital of \$25,000 to manufacture and sell tires, has been organized. The company takes over a partnership which jobbed and retailed tires on East Gay street. Recently a tire-making plant at Newark, O., was purchased and now plans are being prepared for the removal of the plant to Columbus. The incorporators are Carl Pharis, Roy W. Pharis, Emma W. Pharis, Mabel A. Pharis and Clara Weiler.

New Stearns-Knight Trade Mark—A new trade mark has been adopted by the F. B. Stearns Co., manufacturer of Stearns-Knight cars. It consists of a 3½-inch metal reproduction of an armored knight fastened to the radiator cap of all Stearns-Knight cars. The words "Stearns-Knight" are placed on the pedestal on which the figure of the knight stands, and the emblem as a whole serves to distinguish the car at a glance. The trade mark has been copyrighted and application for registration at the patent office at Washington has been made.

Dahl Broadens Out—Articles of incorporation of the Dahl Punctureless Tire Co. of America, with \$6,000,000 capital stock, have been filed in the office of the secretary of state for South Dakota, and this company will at once begin business, with its principal branch office in New York city, 246 West Fifty-ninth street. The business of the new company will be that of manufacturing tires, tire fillers, and selling and dealing in a general line of motor accessories throughout the United States generally. The Dahl Punctureless Tire Co., a Minnesota corporation, has for 3 or 4 years past been engaged in selling the Dahl tire filler and has large selling agencies in Chicago, New York and many other large business centers. The new corporation will take over the patents and the good will of the Minnesota company, and will add

to the filler business the manufacture of casings and a full line of motor accessories and will do a general accessory supply business.

Starts Adding to Plant—Plans have been completed and work is to begin at once on the addition to the American-LaFrance Fire Engine Co., Elmira, N. Y. The annex is to be 100 feet long by 25 feet in width, total cost to be \$10,000. Orders have been issued to rush work on the building and have it completed in 60 days from date.

New R. C. H. Coupe—The R. C. H. Corporation announces a new coupe. The body, built to accommodate three persons, is very roomy. The standard R. C. H. color scheme, red and black, is continued in the exterior finish, while the interior upholstery is a beautiful dark gray whipcord. Each window is provided with silk shades to match the upholstery. The body is mounted on the regular R. C. H. 110-inch wheelbase chassis as in the touring car and long wheelbase roadster.

Handley Completes Marion Organization—Announcement was made in Indianapolis by President J. I. Handley of the Marion Motor Car Co. of the completion of his new organization. The list of men who will work with Mr. Handley in carrying out the new and extensive policies which he has inaugurated, includes J. B. Myers, vice-president, in charge of production; J. M. Edsall, treasurer; F. G. W. Sudrow, sales manager; M. B. Morgan, chief engineer; W. McK. White, advertising manager.

Omaha Company Pushing Work—The Omaha Motor Car Co., of Omaha, which was delayed for a time by various troubles, is now actively pushing work again on the Omaha car, and expects to have a first installment of twenty-five cars on the market soon, along the same lines as the three models first put out. D. Henry, who was president and manager of the company, still retains the title of president, but no longer is connected with the active man-

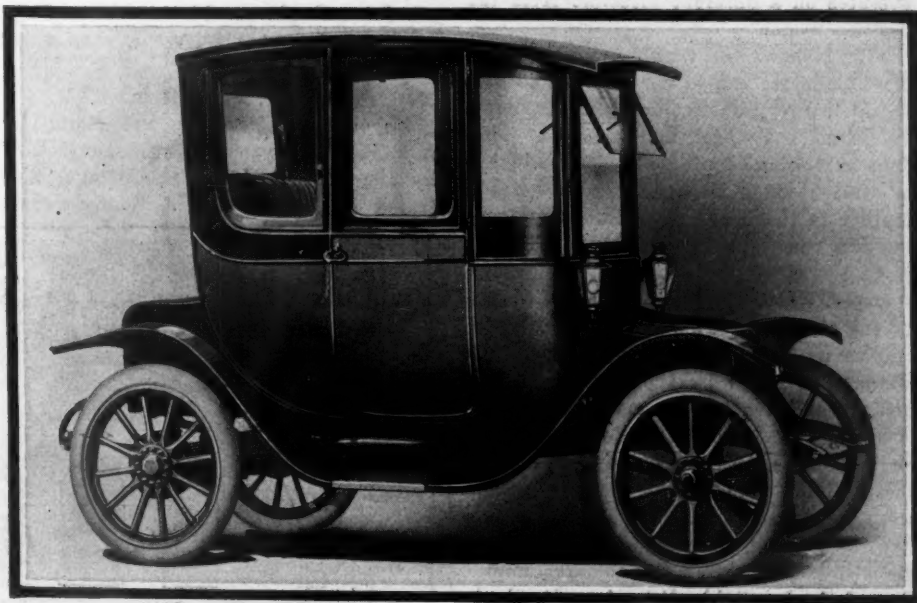
agement of the company. The other officers are acting in this capacity with L. M. Holthe, from Detroit, Mich., in active charge of operations.

New Canadian Factory—A factory in St. John, N. B., may be turning out motor cars by March 1. The Maritime Car Co. has awarded the contract for the erection of the three large concrete buildings which will comprise this factory at Coldbrook, and the work is to be completed by February 1. One thousand pieces of piling will be driven to form a foundation.

Two Shows for Montreal—That Montreal will see two shows during the coming winter seems now assured, the preliminary arrangements having been completed for the holding of the Montreal motor car and motor truck exhibition in the drill hall January 25 to February 1, 1913, in addition to the one to be run by Wilcox, of Toronto. The last named exhibition is to be conducted by and under the auspices of the local dealers.

Object to Testers—The trustees of Woodlawn cemetery, which is located on Central avenue, Toledo, O., at a recent meeting adopted a resolution declaring that the testing of motor cars in the road to the entrance of the cemetery is dangerous and should be abolished. The matter was referred to the association's attorneys for action. The cars which are now being tested on this street belong to the Willys-Overland Co.

Name Changed—Justice Louis W. Marcus of Buffalo granted an order in special term of supreme court last week allowing the United Motor Buffalo Co. to change its name to the Monroe Motor Car Co. The order was granted on motion of Shire & Jellinek, representing Charles F. Monroe, who purchased the United Motor Buffalo Co. from the United States Motor Co. The motion for change of the firm name was not opposed, as the entire stock was secured by Mr. Monroe, president of the company.



NEW MODEL M 3, STANDARD ELECTRIQUE

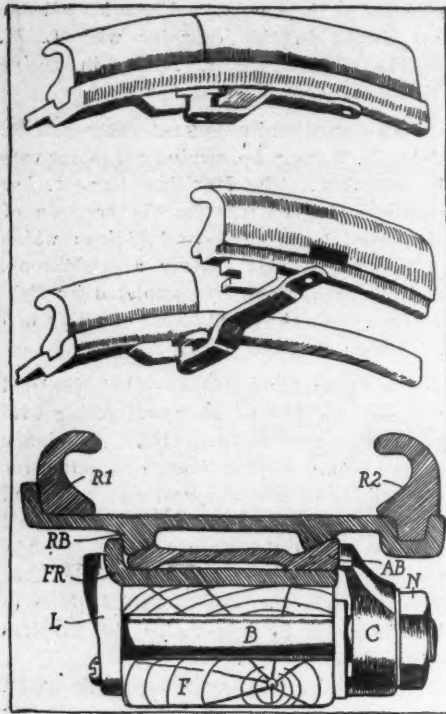


FIG. 1—STANWELD RIM FEATURES

Standard Demountable Rims

COMPRISING demountable, quick-detachable demountable, and plain Q. D. types, the Standard Welding Co., Cleveland, O., has announced a line of rims that embraces many new ideas. The demountable types are, of course, the feature of the line.

The rims are made in three styles of Q. D., non-demountable types, type 50, being an adaptable straight side or clincher type, for those who change their preferences with each change of tires, type 51, for those who are firmly wedded to the straight-sided tire, and type 52, for motorists who stand pat with clinchers. Three styles of demountable rims are made with the same variances in rim base structure, designated types 40, 41 and 42. A light demountable, type 30, is also offered that operates on a different principle from the heavier model.

Fig. 1 shows the type 40, which is the most elaborate rim in the line. It is universal in every particular, being demountable from the wheel, and having a quick detachable rim, adaptable to either clincher or straight-sided tires. The most notable feature in this rim is the method of locking the rim base to the wheel. The adjusting ring is provided with two wedge surfaces, which bear evenly on both sides of the rim base. This construction is exclusive with Standard demountables. The advantages urged by the makers in this manner of retention are many.

Owing to the even expansion of the rim on both sides, less pressure is exerted on the retaining nuts, and on the wheel, than were this pressure on one side only. Tire wear is reduced, over that where the single wedge type is used, due to the elimination of the inevitable distortion attendant to one-sided retention of the rim base; and,

Development Briefs

because of the uniform pressure at all points of the rim, there is no tendency to wobble, the destructive effect of which is so well known. This construction is claimed to be immune, also, to the effect of rust.

The rim is demounted by unscrewing six retaining nuts, N, and turning the clamps, C, out of the way. This releases the adjusting ring, AB, from its pressure against the rim base, RB, and the two may easily be slipped from the felloe band, FR. But one adjusting ring is necessary to a wheel, as the same one is used with the spare rim as with the rim removed. No tools but a wrench are required for this operation. The detaching feature is simpler yet, requiring but the use of a screw driver to loosen the latch, unlocking the retaining ring and permitting its ready removal.

Type 30 differs from the others in all particulars, being much lighter and simpler. The rim base has its retaining rings integral and is made in both straight-side and clincher form. This base is made in two parts circumferentially locked by means of two spring steel rings secured to one of the sections and slotted to receive protruding lugs on the other section. The demounting feature consists of several wedges operating on bolts extending through the wheel felloe.

Grip-Tite Gloves

Latest among the Grinnell Rist-fit line of motor gloves, the Grip-Tite glove makes its appearance. The Morrison-Ricker Mfg. Co., Grinnell, Ia., is responsible for the new glove, which is designed to afford the wearer a positive grip on the wheel, and to resist an unusual amount of wear. This is accomplished by a double-palm and thumb construction, which is built up in corrugations, which insure a secure grip, with the minimum of effort. Like all Grinnell gloves this one is made of pliable and washable leather, with a perforated back, if desired.

New Spark Plug Proposition

Novel in construction and method of sale, the Sturdy spark plug, manufactured by the Sturdy Mfg. Co., Chicago, illustrated in Fig. 5, presents many depart-

Improvements in Standard Welding Co's. Demountables —New Grinnell Gloves —Resilient Tire

ures from the standard. Referring to the drawing, D is the main porcelain, and is protected from breakage by expansion or contraction by the double set of spring washers, F and F1. E is the outer porcelain, which protects the main porcelain, and permits the bushing to be unscrewed from the shell, and in replacing to be drawn to the shoulder, which makes the cracking of the porcelain because of screwing too tight, impossible. The plug is fully protected against leakage by the

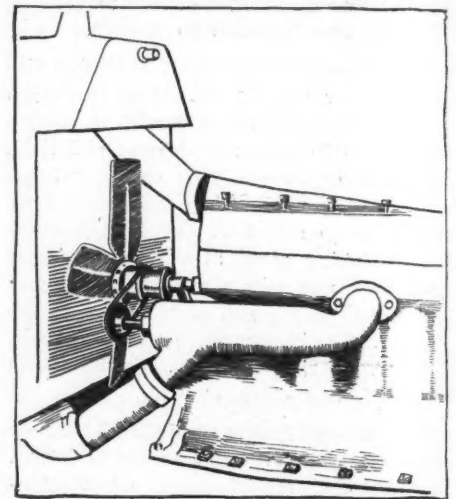


FIG. 2—SCREW PUMP FOR FORDS

counter-sunk copper-asbestos gasket at J, by the annealed copper gasket at H, and by the asbestos gaskets at G and G1. A mica gasket is placed at K, and the points at L are of platinum and iridium.

The plugs are sold in sets of five and seven, for four and six-cylinder engines, the extra plug being put up in a leather case for emergency use. A definite life guarantee is included in each box which covers all failure not due to misuse.

National Spring Tire

With a guaranty of 10,000 miles, the National Spring Tire Co., of New York, is

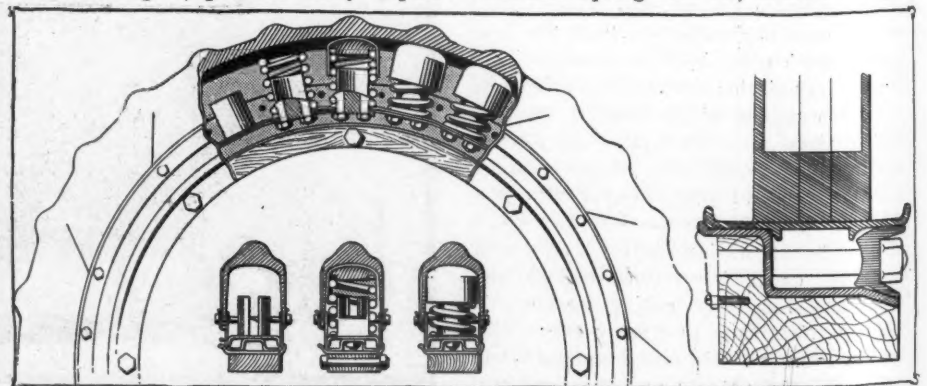


FIG. 3—FEATURES OF DESIGN OF THE NATIONAL SPRING TIRE

Novelties for Motoring

Push-Button Gas Starter— Radiator Cleanser—Spark Plug—Pump for the Ford Model T

marketing the spring tire illustrated in Fig. 3. It consists of a demountable rim of special construction, to which a hollow base of pressed steel is secured. This base is channelled at its middle, and has a series of cylindrical rim plugs, or spring guides, bolted around its periphery, on which are placed heavy coil springs, capped with overlapping compression caps, which bear on an outer fabric or shoe which is removable. A variety of treads will be furnished and various internal variances will obtain. Among these will be side-guys to hold the caps laterally in place, and an annular independently-working metal ring to take the place of guys. The tires will be made double and triple decked—one within one—and with and without outer covering, using instead, cork, pulp or rubber-shod caps. The rims will also vary in construction. The tire will not vary greatly in appearance from the pneumatic, and will fit ordinary wheels. Knobs are placed in the tread over each spring cap to prevent skidding.

Water Pump for Fords

In line with the numerous accessories specially designed for Ford cars, the Fulton McCutchan Co., of Chicago, has just brought out a water circulator, which with very little change may be applied to the thermo-syphon system of a Ford motor. The device consists of a water screw, mounted within an aluminum trunk, and operated by means of a spring belt and split pulley

from the fan shaft. It is applied on the left side of the motor in the place of the regular inlet connection, being held on by the same screws. A short length of hose, furnished with the outfit is clamped to the radiator connection, the split pulley is clamped to the fan shaft, and the device is ready for use. It is of cast aluminum, and weighs but 3 pounds. Everything necessary to its application is included for installation as shown in Fig. 2.

Apex Radiator Cleanser

To clean out radiator incrustations is the purpose of Apex radiator cleanser, manufactured by the United States Compound Co., of Buffalo, N. Y.

It is claimed that it is absolutely non-injurious to the radiator, as it contains no alkali, caustic soda, acid, mercury, or other harmful ingredients, being made of harmless vegetable oils. It is mixed with the water in proportions of 1 ounce to a gallon, and the water is drained off after a week's time, bringing with it the scale, sediment and rust.

Simple Gas Starter

Simplicity is the keynote to the Rekar automatic self-starter, which is the product of the Rekar Automatic Starter Co., San Francisco, Calif. It consists of but one main part, with suitable piping. This part is the distributor, which is screwed to the front of the dash, an operating button projecting through an ornamental plate on the front of the dash.

The body of the distributor consists of a plunger valve, having two annular grooves, and connected by a central port to radial ports, with leads to the cylinder pet cocks. One end of the plunger projects through the dash, passing through a stuffing box, the other end being provided with a lead valve head, normally held

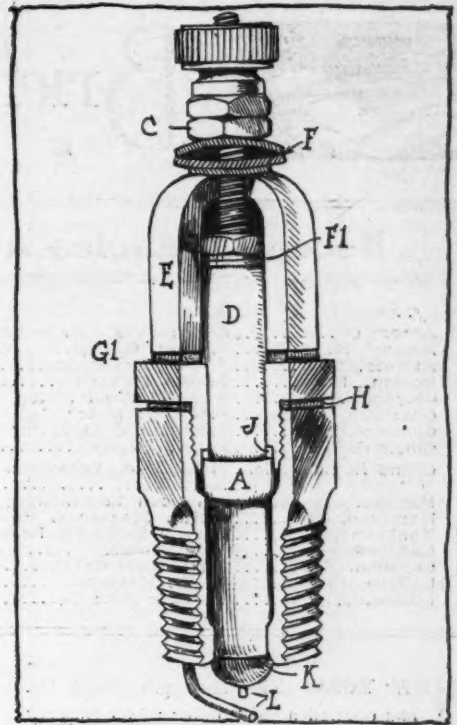


FIG. 5—STURDY SPARK PLUG

against its seat by a spring, which is seated in the hollow screw plug of the gas chamber. A supply pipe leads from this chamber to the gas tank. To start the engine, the foot is pressed against the plunger button on the dash, which causes the valve to unseat, admitting a supply of gas to the distributor chamber, the annular groove registering successively with each of the discharge ports. This admits a charge of acetylene gas to each cylinder, at which time the foot pressure is released, and the supply valve is closed by the spring. The engine is then started on the spark. For cold countries an extra port is provided for admission of gas to the manifold, which permits the engine to run on gas until warm, or in case the fuel supply has been exhausted, in which case the button is held as long as a supply of gas is required. The Rekar starter is sold in two-cylinder, four-cylinder, six-cylinder, and eight-cylinder models, and may be applied to any car. As shown in Fig. 4, its installation involves no mechanical changes.

Fowler Howler Whistle

Designed to be attached to the exhaust by means of a suitable cut-out valve, the Fowler howler whistle is manufactured by the Fowler Lamp and Mfg. Co. of Chicago. It is substantially an exhaust siren, its peculiar sound being produced by a revolving disk fan within a cylinder perforated at its end. The gas in passing through the vanes of the disk causes it to rotate violently breaking up the gases as they escape through the apertures at the end of the howler. It is claimed that its note, while distinct, is not unmelodious, and that, due to the motion of the revolving disk, it is impossible for it to become clogged.

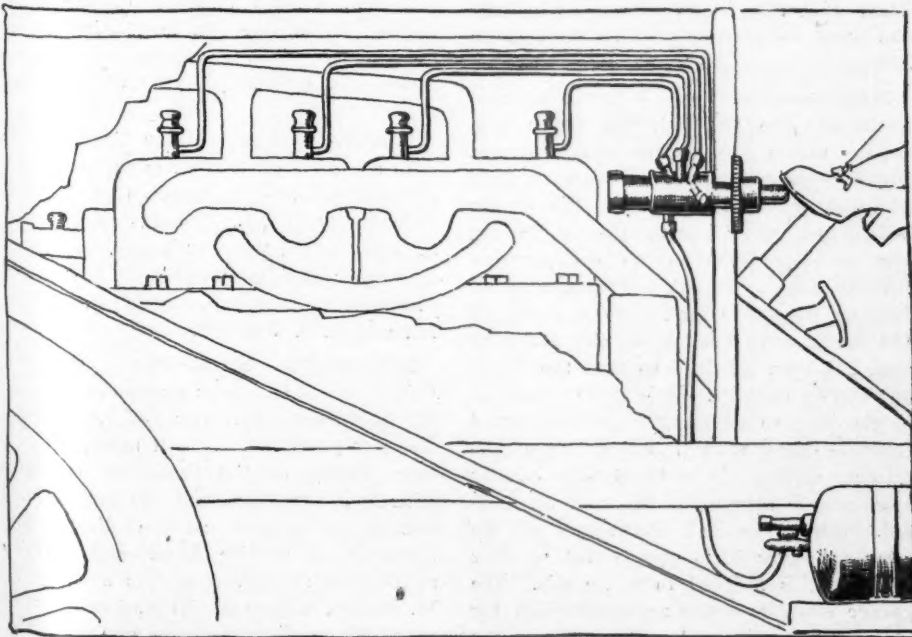


FIG. 4—REKAR GAS STARTER



Brief Business Announcements



Recent Agencies Appointed by Pleasure Car Manufacturers

Towns—	Agent	Car.	Town	Agent	Make
Akron, O.	Akron Auto Garage Co.	R. C. H.	Leamington, Ont.	R. H. Ellis	Cadillac
Albany, N. Y.	Preston Garage	Jackson	Marshall, Ind.	Thompson and Walther	R. C. H.
Atlanta, Ga.	E. D. Crane & Co.	Pullman	Menominee, Wis.	Menominee Auto Co.	R. C. H.
Boston, Mass.	Boston Motor Co.	Pullman	Nashville, Tenn.	Cumberland Motor Car Co.	Franklin
Chicago	R. S. Mattoon Motor Co.	Ohio	New York	Knickerbocker Motor Car Sales Co.	Havers
Charlotte, N. C.	Piedmont Motor Car Co.	R. C. H.	Newark, N. J.	Van Denab & Wainwright	Pullman
Colborne, Ont.	Canadian Ohio Motor Car Co.	Ohio	Newman, Ill.	Henley Eversole	R. C. H.
Cincinnati, O.	R. W. Pagels	Pullman	Penn Yan, N. Y.	A. H. Wagner	Rambler
Grand Rapids, Mich.	Stratton & Woodcock Automobile Co.	Franklin	Pittsfield, Mass.	Arthur LaMott	Pullman
Havana, Cuba	American Vulcanizing Co.	Pullman	Quebec, Can.	J. E. Paulin	Pullman
Hamilton, Ont.	Smith, Stacker & Feeder Co.	Regal	Rochester, N. Y.	Crosby Garage	Velle
Kankakee, Ill.	Lincoln Garage & Repair Shop	R. C. H.	Rochester, N. Y.	Knipper-Kipp Co.	Henderson
Lancaster, Pa.	B. F. Futer	Pullman	Rochester, N. Y.	Mathias R. Kondolf	National
Lebanon, Pa.	Commercial Garage	R. C. H.	Sistersville, W. Va.	Tyler Motor Co.	Pullman
LaSalle, Ill.	F. W. Koenig	R. C. H.	Salem, O.	H. L. Slagle & Co.	Krit
Louisville, Ky.	Younger Auto Co.	Franklin	Wilmington, Del.	Wilmington Automobile Co.	Lozier
			Wilmington, Del.	Wilmington Automobile Co.	Bulck

NEW YORK—The Halcomb Steel Co. has opened a sales office at 95 Liberty street.

Troy, N. Y.—A company has been formed at Troy, to handle the R. C. H. in this city. Daniel Conway, Jr., and James N. Bussey are in the partnership.

Syracuse, N. Y.—The Jefferson Garage Co. has secured the agencies for the National, Alco, and Hupmobile. This new concern is at 428-434 East Jefferson street.

Toronto, Ont.—The King Motor Car Co. has appointed the Matheson Automobile Co., 170 Victoria street, Toronto, Canada, as its dealers to cover a large part of the province of Quebec.

Rochester, N. Y.—The Cutting Auto Sales Co., 37 East avenue, has completed specifications for a large garage having a row of stalls for cars with iron grating doors in which owners of motor vehicles may leave their cars and keep the keys.

Dallas, Tex.—A recent addition to the list of dealers in Dallas is the organization of the Sacksteder-Potter Co. The new firm is composed of M. A. Sacksteder, C. H. Potter and Jesse Illingsworth, all of Dallas. This city will be made headquarters for the distribution of American and Marion cars. Branch houses are to be established in different cities of Texas.

Minneapolis, Minn.—The Colby Motor Co., factory branch at 1100 Hennepin avenue, is building a branch house at 1521 Hennepin avenue, to be two stories, 50 by 150 feet on the ground. It will be completed in 3 months. Manager J. V. Campbell will be sales manager at the factory, Mason City, Iowa, and his place here will be taken by Henry Walch, Albert Walch and LeRoy Werges of Monona, Iowa. They will divide the management of the outside and the city sales among them. The Colby garage at Monona will be continued by Joseph Walch. The territory of the branch is

Minnesota, North and South Dakota, Montana, Canada and northern Wisconsin.

Saskatoon, Sask.—Richiss & Paterson have commenced the manufacture of tops here.

Skaneateles, N. Y.—The Skaneateles Garage Co., capital \$6,000, has been incorporated, the directors being George D. Cuddeback, Edward J. Scott, Florence K. Scott.

Richmond Hill, N. Y.—The Dillman-Helin Motor Co., has been organized here, the directors being William C. Dillman, Richard A. Dillman, Bero W. Holin, W. J. Bissell, Fred J. Hoerlein.

Montreal—The Montreal Automobile Carriage Co. has been formed for the purpose of building all sorts of cars. The Vinot Car Co. of Canada has contracted for all the Vinot cars to be built by the carriage company and a small army of skilled mechanics is on its way from the Vinot factories in France. The chassis and body will be built in its entirety in Montreal.

Montreal—The Begg Motor Co., local agent for the Cadillac, has taken possession of its new garage and salesroom which represents an expenditure of over \$200,000, and is situated at the corner of Georgia and Thurlow streets, having also an advantage of an entrance on Alberni street. It has a frontage of 66 feet on Georgia street, with a depth of 132 feet, while enough of the block of land has been retained so that the frontage can be doubled. It is three stories in height and so constructed of reinforced concrete that it will carry three additional stories. It is faced with cement brick and is thoroughly fireproof throughout. The offices and showrooms of the company cover 5,500 square feet of floor space and is finished in white tile. The garage itself provides accommodation for at least 200 cars, and will contain every modern facility for handling motors, in-

cluding two 5-ton freight elevators, and one large passenger elevator.

Plattsburg, N. Y.—The Pepin & Mousé Co. has formally opened its new garage in Plattsburg, N. Y.

Winnipeg, Man.—The Electric Motor and Sales and Repair Co. is the name of a new company recently incorporated to do business in this city.

Minneapolis, Minn.—The Moline Automobile Co., factory branch, has made a 2-year lease of the building at 1401 Hennepin avenue. W. J. Lawrence is manager.

Montreal—The Bellerive Garage and Auto Co., Ltd., has been incorporated to do business here as agent for motor cars, commercial trucks, and doing a general repair business with a capitalization of \$90,000.

Cleveland, O.—Harry S. Moore has been appointed special factory representative and general manager of the Stutz Motor Car Co., the new local sales agency for Stutz cars. Temporary quarters have been established at 1761 Crawford road.

Montreal—Drednot Motor Trucks, Ltd., with a capital of \$50,000, is building 1-ton motor trucks for the Canadian market. The directors are: W. L. Haskell, president; H. S. Ross, K. C., John S. Rigby, vice-president and managing director; V. S. Ross; L. C. Haskell, secretary-treasurer; J. E. Merritt and D. S. Whittall.

Minneapolis, Minn.—The Minnesota Cartecar Co. has been organized with A. R. Workman, formerly of Ainsworth, Neb., as president. It will manage a factory branch of the Cartecar company with Minnesota, Montana, the Dakotas and northern Wisconsin as the distributing territory. A service department will be maintained at 1027 Hennepin avenue. S. W. Kamm, vice-president and sales manager, was recently manager at Omaha for Fuller & Johnson, manufacturers of gaso-

line engines. Secretary A. D. Hunter was formerly with the Buick.

Gilbertsville, N. Y.—The Meyers garage and repair shop has formally opened a large garage in Gilbertsville.

Rochester, N. Y.—The Knipper-Kipp Co. has opened its new garage, known as the Kondolf, at the Monroe avenue bridge. The new garage is one of the largest in Rochester.

Winnipeg, Man.—The Peerless Punctureless Tire Co. has opened offices on Main street, and also has completed arrangements for a factory where this make of tire will be manufactured for the trade in Canada.

Brooklyn, N. Y.—The Braender Rubber and Tire Co., New York city, with a factory at Rutherford, N. J., has established a branch office and salesrooms at 1211 Bedford avenue, Brooklyn. C. W. Smith is manager. This company has a New York store at 1987 Broadway, between Sixty-seventh and Sixty-eighth streets.

San Francisco, Cal.—The distribution of the Michigan cars for 1913 in California, Nevada, the Hawaiian islands and the Orient will be made by the Michigan Motor Car Co., California branch, a \$1,000,000 corporation just organized. The following officers have been elected: President, V. L. Palmer; first vice-president, F. B. Lay, Jr.; second vice-president, W. H. Cameron, third vice-president, Geo. H. Daugherty; treasurer and general manager, C. P. Kiel; secretary, C. C. Bobb.

The above, with H. L. Kiel, son of C. P. Kiel, constitute the board of directors.

Rochester, N. Y.—The firm of F. R. Luescher, Inc., will formally open its new home, 191-195 East avenue, Rochester, October 1.

Winnipeg, Man.—The Breen Motor Co., Ltd., of this city, has been appointed sole distributor for the Cole car in the provinces of Manitoba, Saskatchewan, Alberta, British Columbia.

Detroit, Mich.—Russel A. Shields, who has been associated with the Studebaker corporation in the capacity of testing engineer, has resigned to accept a position in the sales department of the Chalmers Motor Co., with headquarters at Detroit.

Tilbury, Ont.—Residents of Tilbury carried a by-law last week to grant a loan of \$5,000 to the Imperial Rubber Co. for immediate construction of its factory in which to manufacture rubberized cloth for motor cars. The loan is repayable in 10 years without interest.

Buffalo, N. Y.—The A. W. Haile Motor Co. has been incorporated to handle retail Studebaker sales in Buffalo, N. Y. Arthur W. Haile is president and general manager, and Bradley H. Phillips, secretary-treasurer. The firm has rented the centrally located salesroom of the Studebaker Corporation of America, 1015-1017 Main street. In addition to Buffalo, the Haile Motor Co. will handle retail Studebaker sales in Erie and Niagara counties. The Studebakers' Buffalo wholesale branch remains at its

former location in charge of B. F. Kinsman, and is unaffected by the change.

Rochester, N. Y.—John Meiser, superintendent of the Selden Motor Car Co., has resigned to become connected with the Knipper-Kipp Co. in the Kondolf garage, Monroe avenue.

Fargeville, N. Y.—P. W. Devendorf, proprietor of a large garage at La Fargeville, has secured the Arsenal street garage at Watertown, N. Y. He will conduct both establishments.

New York—It is announced that C. S. Henshaw has resigned as manager of the Thomas Motor Co., of New York, to take effect in the near future. It is not known at the present time what course Mr. Henshaw is to follow. His permanent residence is Belmont, Mass.

Dolgeville, N. Y.—The rapidly increasing business of the Smith Brothers garage has necessitated the enlargement of the modern fire-proof building on Slawson street, in which it is located. A contract has been let for the building of a 40 by 40 addition which will be completed this year.

Minneapolis, Minn.—Amund N. Dahl, Frank H. Lewis, and Freling H. Stevens of Minneapolis have incorporated the Dahl Punctureless Tire Co. with a capital of \$6,000,000, at Pierre, S. D. Business offices are to be in New York. Other incorporators are I. Seery, Wausau, Wis.; Russell N. Stewart, New York; Homer St. Denchy, Buffalo; Thomas A. Callahan, Boston, and Tom C. McNamee, Pierre.

Boston, Mass.—Berkeley Motor Car Co., capital stock, \$1,000; directors, F. H. Freeman, E. Staunton, H. A. Wentworth.

Boston, Mass.—F. A. Dutton Motor Co., capital stock, \$25,000; directors, F. A. Dutton, C. H. Farnsworth, J. C. Smith.

Boston, Mass.—Standard Auto Supply Co., capital stock, \$100,000; directors, E. W. Shepherd, M. F. Cullney, E. A. Farren.

Boston, Mass.—Tyler Brothers Corp., capital stock, \$100,000; general motor car business; directors, F. J. Tyler, L. S. Tyler, J. W. Gibbs.

Boston, Mass.—B. & P. Sales Co., capital stock, \$50,000; general motor car business; directors, R. B. Skinner, G. B. Bowman, L. A. Brimmer.

Boston, Mass.—W. H. Webster Jones Co., capital stock, \$15,000; to deal in power vehicles; directors, W. H. Jones, Webster Jones, G. L. Ellsworth.

Boston, Mass.—E. C. Andrews Co., capital stock, \$10,000; to manufacture motor car tops, etc.; incorporators, E. C. Andrews, N. Russell Lynn, Z. A. Hall.

Buffalo, N. Y.—Continental Motors Corp., capital stock, \$100,000; incorporators, G. F. Matthews, F. V. Whyland, A. E. Choate.

Buffalo, N. Y.—A. W. Haile Motor Co., capital stock, \$25,000; incorporators, A. W. Haile, B. H. Phillips, E. C. Scheneker.

Buffalo, N. Y.—A. W. Haile Motor Co., capital stock, \$25,000; to deal in motor cars; incorporators, A. W. Haile, B. H. Phillips, E. C. Schenker.

Daytona, Fla.—Pneu Tire Filler Co.; incorporators, V. G. Collins, E. Oliver, E. F. Oates, H. C. Thompson.

Dunkirk, N. Y.—Dunkirk Specialty Co., capital stock, \$5,000; to sell supplies; incorporators, B. C. Candee, S. B. Culver, J. M. Henderson.

Durham, N. C.—R. B. Lyon Motor Car Co., capital stock, \$50,000; incorporators, E. B. Lyon, J. M. Black, J. E. Johnson.

Ft. Wayne, O.—Drage Harris Motor Truck Sales Co., capital stock, \$10,000; directors, F. A. Drage, D. H. Harris, H. L. Somers.

Highland Park, N. J.—Walter Williamson Automobile Co., capital stock, \$10,000; to deal in motor cars; incorporators, W. M. Williamson, W. Whittlesey, V. J. Miller.

La Crosse, Wis.—Hoff Motor Car Co., capital stock, \$500,000; incorporators, J. E. Hoffwever, A. J. Hoffwever.

Recent Incorporations

Manhattan, N. Y.—Fiat Motor Sales Co., capital stock, \$300,000; to manufacture and deal in motors, engines, etc.

Milbridge, Me.—Milbridge Motor Co., capital stock, \$10,000; directors, J. W. Sawyer, J. S. Wyman, A. A. Wallace.

New York—Gasova Co., capital stock, \$50,000; incorporators, J. J. Smart, G. T. Keen, E. Cable.

New York—Globe Taxicab Co., capital stock, \$2,000; incorporators, M. Cox, Charles Aaronson, John Lambert.

New York—Whyle S. Merritt Co., capital stock, \$10,000; incorporators, Paul Thamm, S. W. Merritt, C. V. Morse.

New York—United Tire Sales Co., capital stock, \$500; incorporators, A. G. Thaanum, J. T. Weed, Max Greenberg.

New York—Fiat Motor Sales Co., capital stock, \$300,000; incorporators, Charles Whitney, W. Scallon, J. N. Blair.

New York—North River garage, capital stock, \$20,000; incorporators, W. E. Lockwood, L. E. Jelly, R. E. Shaw.

New York—Viking Mfg. Co., capital stock, \$25,000; to make motor cars, etc.; directors, A. R. Bangs, R. Condon, A. O. Briggs.

New York—Viking Mfg. Co., capital stock, \$25,000; to manufacture motor trucks; incorporators, A. R. Bangs, R. Condon, A. O. Briggs.

New York—New York Electric Vehicle Association, capital stock, \$50,000; incorporators, G. Tierman, F. H. Parcello, R. G. Redlefsen.

New York—Salvini Electrical Horn Mfg. Co., capital stock, \$50,000; to manufacture horns and supplies; incorporators, E. Salomon, G. S. Salomon, S. Salvini.

New York—Ideal Automobile & Garage Co., capital stock, \$10,000; to handle supplies for motor vehicles; incorporators, J. W. Collopy, Jr., R. H. Smith, A. P. Morewood.

New York—Gassova Co., capital stock, \$50,000; to deal in patent articles for operating and repairing motor vehicles; incorporators, J. L. Smart, G. T. Keen, E. Cable.

New York—Roulements E. Debois Ball Bearing Co., capital stock, \$25,000; to manufacture ball bearings; incorporators, J. S. Sherman, W. W. Sherman, H. T. Sherman.

Pierre, S. D.—Dahl Punctureproof Tire Co., capital stock, \$6,000,000; directors, A. N. Dahl, F. H. Lewis, F. H. Stevens.

Port Chester, N. Y.—Lowden and Flint's City Garage, capital stock, \$3,000; incorporators, C. H. Flint, G. M. Flint, A. B. Lowden.

Providence, R. I.—A. W. Harris Oil Co., capital stock, \$75,000; to deal in lubricating oils, etc.; directors, B. S. Terry, A. D. Green, G. F. Heywood.

Springfield, Mass.—Harley Co., capital stock, \$50,000; motor car business; directors, L. J. Harley, Jr., L. J. Harley, T. B. Purves, Jr.

Stillwater, Minn.—Republic Motor Co., capital stock, \$10,000; to manufacture motor vehicles; incorporators, G. H. Sullivan, L. L. Manwaring, P. H. Guilford.

Troy, N. Y.—Troy Motor Co., capital stock, \$10,000; to deal in motor cars; incorporators, F. S. Snyder, F. A. Snyder, J. B. Wood, J. A. Wendell, R. G. Thormeyer, H. P. Schoenmaker, C. R. Kilmer.

Wellsburg, W. Va.—Brooke Auto Co., capital stock, \$10,000; incorporators, J. H. Scott, W. H. Scott, C. M. Magee, F. A. Chapman, E. A. Fegan.

Wilmington, Del.—Auto Service & Supply Co., capital stock, \$15,000; to manufacture and deal in motor cars.

Wilmington, Del.—Salisbury Ball Bearing Mfg. Co., capital stock, \$100,000; incorporator, H. Ralph Ewart.

Wilmington, Del.—Automobile Tire Filling Sales Co., capital stock, \$1,000,000; incorporators, C. G. Stiegler, O. W. Stiegler, W. O'Keefe.

Wilmington, Del.—Automobile Tire Filling Sales Co., capital stock, \$1,000,000; incorporators, C. G. Stiegler, O. W. Stiegler, W. O'Keefe.

Worcester, Mass.—Morgan Motor Truck Co., capital stock, \$300,000; directors, C. B. Foster, E. F. Jones, C. H. Derby.



The Motor Car Repair Shop

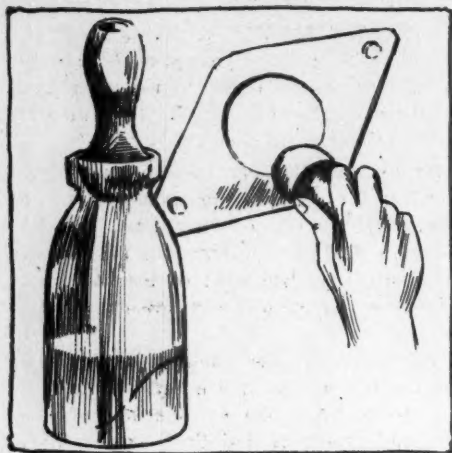
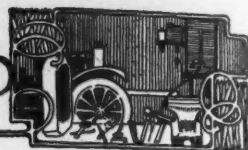


FIG. 1—COMBINED STOPPER AND SWAB FOR SHELLACING GASKETS

EVERY motor car repairman is familiar with the use of shellac for making an airtight joint, and probably no substance is more commonly used for this purpose when joints are to be made between the sections of a crankcase of a motor, or the gearcases of change-speed or rear axle mechanisms. It also is a well-known fact that shellac is a dirty, sticky substance to handle owing to the fact that it usually gets on the hands where it dries quickly and is difficult to remove. But means can be provided with little trouble by which it may be employed without this disagreeable feature.

If a bottle or can of shellac is to be prevented from drying up, the receptacle in which it is kept must be corked up when not in use. If a brush is employed in its application, it must be adjustably mounted in the stopper, or removed and carefully cleaned with alcohol or varnish remover immediately after its use. Otherwise the shellac will dry upon it and render it about as useful as a stick. A stick, by the way, is the most common means of applying shellac in the motor car repair shop.

There is a better method, though, which may be employed with improved results. It consists of an egg-shaped wooden stopper with a handle, as shown in Fig. 1. When a workman wishes to spread a coat of shellac upon a gearcase cover or a gasket, he has but to invert the bottle with the stopper in place, then remove the stopper and roll the large end over the surface to be coated and a coat of shellac is left in its wake.

Making Gaskets

One of the first lessons a young repairman is taught when he commences his career in the shop is that of making gaskets. The gaskets between the bases of the cylinders and the crankcase generally are made by stretching drawing paper or

Making Shellac Gaskets

wrapping paper over the mouth or base of the cylinder, and then, while holding the paper firmly in place with one hand, operating the ball peen hammer as shown in Fig. 2. The round end of a light hammer should be employed in this process, and the gasket is cut out by lightly tapping the sharp edges of the cylinder base through the paper. This method is often employed in making gaskets for aluminum parts but results in damage to the casting. Aluminum is very soft and the edge is broken down, generally after the first gasket is made, the paper does not cut so easily, more hammering is required, the area of contact surface is reduced and the joint is thus more difficult to render oil-tight.

To make a gasket for an aluminum case, the paper should be pressed over the bolt holes and edges of the case so that an impression is made that can be seen easily; the gasket then can be cut out readily with a pair of scissors or a knife in much less time than would be required to do it with a hammer. Lead, copper and asbestos gaskets for flange connections of the water and gas manifolds can be made easily with a peening hammer as paper gaskets are made, but rubber gaskets are more easily cut with a knife. In making gaskets from wire asbestos sheet packing, the hammer cannot be used to advantage, and it is better to cut them out with a pair of tin-snips or an old pair of shears.

Speedometer Repairs

There seems to be a prevailing disposition on the part of many owners and amateur repairmen when the general overhauling of a car is in progress to overlook or neglect those outside fittings which under ordinary circumstances give very little trouble. In this category the speedometer comes in for no small share of neglect. When the car goes into the shop, this instrument is disconnected usually, and carefully laid away with other fittings until the time comes for their replacement, and that is often all the care that instrument receives.

On the other hand, if the owner has been having trouble with the speedometer, he reports the matter to the repairman and then it too receives attention. The repairman, however, very properly, never attempts to repair the internal mechanism of the speedometer, but sends it to the nearest speedometer agent. It is folly for the repairman, driver or owner not entirely familiar with the construction of the speed indicator to run the

risk of injuring the instrument just to satisfy his curiosity or to fix something—he knows not what—without the ability or special tools required to do it.

All reputable manufacturers of these instruments have agents in the larger cities throughout the country who are equipped for repairing these instruments and have in their employ skilled mechanics who do nothing else but install, overhaul and regulate them. The troubles to which the speedometer are subject are comparatively few and usually of such a nature as to be quickly remedied under proper treatment, but the necessary repairs and adjustments are difficult and perhaps impossible without the special tools and devices. With the knowledge of the expert and the aid of special appliances 5 or 10 minutes is all the time usually required to locate and learn the cause of the trouble and in most cases the most extensive repair requires only a comparatively short time.

What is more, no charge is made for the services of these workmen, as it is the desire of the manufacturers and dealers to keep their instruments in the best possible condition. The speedometer is on the job whenever the car is in motion and it, as well as the car, requires the attention of an expert about once a year. It is valuable and practicable to take advantage of the free services of the manufacturers' representative when the instrument is in need of repair or adjustment. The location of the nearest repair station can be learned by writing to the maker and the instrument sent by express for adjustment. The express charges will be less than the cost of the generally inefficient repair of the local repairman and a satisfactory job is assured. The liability to damage of the instrument in the hands of an inexperienced workman is great.



FIG. 2—CUTTING OUT GASKETS WITH A MACHINIST'S HAMMER